NOISE ANALYSIS REPORT

INTERSTATE 65 ADDED TRAVEL LANES
CLARK AND SCOTT COUNTY, INDIANA

LEAD DES. NO. 1700135

Prepared for:

INDIANA DEPARTMENT OF TRANSPORTATION

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Executive Summary

This analysis was developed to determine the traffic noise levels and traffic noise impacts associated with the proposed construction of additional travel lanes along Interstate 65 (I-65) between the Blue Lick Road interchange and State Road (SR) 56 interchange, in Clark and Scott County. The proposed project occurs along the existing I-65 roadway. The proposed project begins approximately 0.5 mile north of the Blue Lick Road interchange and continues north to approximately 0.5 mile south of the SR 56 interchange. The total length of the project is approximately 12.5 miles.

The proposed project is considered a Type I Project as it involves the addition of through lanes. This noise analysis was prepared in accordance with the Federal Highway Administration's (FHWA's) Highway *Traffic Noise: Analysis and Abatement Guidance (December 2011),* and the Indiana Department of Transportation's (INDOT's) *Traffic Noise Analysis Procedure (July 1, 2017)*.

The existing year (2021) noise levels, as well as the design year (2043) noise levels were predicted using FHWA'S approved noise predicting program, *Traffic Noise Model, Version 2.5 (TNM 2.5)*. To validate the model, short-term (15 minute) field measurements were taken at 10 sites within the analysis area; all applicable sites were validated.

A total of 216 receptors were identified within the noise analysis area, representing three different noise abatement criteria (NAC) land use activity categories, Activity Categories B, C, and D. Of the 216 receptors analyzed, 206 are classified as single family residential units (Activity Category B), 8 are Activity Category C, and 2 are Activity Category D. The analysis area also includes agricultural, industrial, and undeveloped land that, at the time of this analysis, was not permitted for future development (i.e., new subdivision or commercial building that has been platted). These areas are considered to be Activity Category F and Activity Category G land use types for which there is no NAC criteria. While receptors were not placed in these areas, an approximate contour representing the area likely to experience noise exposure levels of 66 dBA has been defined (Appendix A, Page A-18 to A-27). This will assist City and County planning officials responsible for the permitting of future development in ensuring incompatible land use types do not encroach upon this contour.

The results of this analysis identified 109 receptors as approaching/exceeding the NAC in the design year (2043). Twenty-two noise barrier locations were modeled within the analysis area. Based on the studies completed to date, it has been determined that noise abatement is likely, but not guaranteed, at one of these locations; east of I-65 northbound lanes approximately 0.5 mile south of SR 160 (Noise Barrier 3). A re-evaluation of the noise analysis will occur during final design. If during final design it is determined that conditions have changed such that noise abatement is not feasible and reasonable, the abatement measures might not be provided. The final decision on the installation of noise abatement measures will be made after completion of the project's final design and the public involvement process. The views of the benefited property owners will be considered in determining the reasonableness of noise abatement measures for this project.

1.0 Introduction

The INDOT is advancing a federal-aid project to construct additional travel lanes along I-65 between the Blue Lick Road interchange and SR 56 interchange, in Clark and Scott County (Des. No. 1700135). The proposed project begins approximately 0.5 mile north of the Blue Lick Road interchange and continues north to approximately 0.5 mile south of the SR 56 interchange. The total length of the project is approximately 12.5 miles. Additional Des. Nos. associated with this project include Des. Nos. 1600729, 1600733, 1600744, 1600750, 2001600, 2001601, 2001603, 2001604, 2001605, 2001607, 2001593, 2001594, 2001595, 2001596, 2001597, 2001598, and 2001599 for bridge and drainage structure work.

1.1 Purpose of Analysis

The purpose of this noise analysis is to assess existing and future traffic noise levels associated with the I-65 Added Travel Lanes project, identify impacted receptors within common noise environments (CNEs), and evaluate potential abatement solutions for feasibility and reasonableness if impacted receptors are present. The analysis was performed in accordance with the current INDOT's *Traffic Noise Analysis Procedure (July 1, 2017)*.

1.2 Project Description

The proposed project area is located near Henryville and Scottsburg, on the Henryville, Scottsburg, and Speed USGS Topographic Quadrangles in Section 25, Township 3 North, and Range 5 East; Section 26, Township 1 North, Range 5 East; Section 27, Township 4 North, Range 5 East; Section 30, Township 3 North, Range 6 East; Section 20, Township 1 North, Range 6 East; Section 10, Township 2 North, Range 5 East; Sections 15, 20, 27, and 36, Township 2 North, Range 6 East; Sections 28 and 32, Township 3 North, Range 5 East; Sections 13, 23, 27, and 34, Township 3 North, Range 6 East; and Tract Numbers 220, 238, 240, 250, 265 and 268. (Appendix A, A-2 to A-6)

1.2.1 Existing Road Conditions

This section of I-65 is currently a four lane *Interstate*. The existing typical cross section of I-65 consists of two 12-foot travel lanes bordered by a 10-foot paved outside shoulder and a 4-foot paved inside shoulder in each direction. An approximately 50-foot-wide grassed median separates the northbound lanes and southbound lanes for a majority of the project area. A six lane section of I-65 is present at the southern extent of the project corridor. The surrounding land use is primarily residential and agricultural uses, with some scattered industrial and maintenance facilities. The project area bisects Clark State Forest.

1.2.2 Proposed Road Improvements

The current project proposes the addition of travel lanes (one in each direction) along I-65 within the roadway median from approximately 0.5 mile north of Blue Lick Road interchange to approximately 2.2 miles south of the SR 56 interchange. The additional travel lanes will follow the existing grade. The existing lanes of I-65 will undergo a mill and resurface. The project proposes to maintain the existing typical cross section of I-65 from 2.2 miles to 0.5 mile south of the SR 56 interchange with a mill and resurface.

2.0 Existing Noise Environments

In accordance with the INDOT *Traffic Noise Analysis Procedure (July 1, 2017)*, potential receptors were identified within the analysis area, which is roughly defined as the area 500 feet off the proposed edge of pavement. A total of 216 receptors were identified within the analysis area and evaluated as part of this noise impact analysis. Of the 216 receptors analyzed, 206 are classified as single family residential units (Activity Category B), 8 are Activity Category C, and 2 are Activity Category D. **Section 2.1** below provides a more comprehensive description of each modeled receptor and its associated activity category.

2.1 Common Noise Environments

The overall land use within the analysis area is primarily residential and agricultural uses, with some scattered industrial and maintenance facilities. The project area bisects Clark State Forest. The analysis area defined for this project is divided into six Common Noise Environments (CNEs) and discussed further below (Appendix A, Page A-18 to A-27). **Table 2-1** identifies the composition of receptors within each CNE.

TABLE 2-1 - RECEPTOR COMPOSITION WITHIN CNE'S

CNE	Activity Category B	Activity Category C (ERUs)	Activity Category D	Total DU / ERU
CNE 1	57	0	0	57
CNE 2	1	0	0	1
CNE 3	84	24	2	110
CNE 4	40	18	0	58
CNE 5	0	0	0	0
CNE 6	24	2	0	26
Total DUs[1]	***206***		***2***	***252***
Total ERUs[2]		***44***		

1 – DU = dwelling unit. Each single family residence or business with an exterior use is considered to represent one DU. One apartment would represent 1 DU.

2 – ERU =equivalent residential unit. Special use lands, such as recreational facilities, require a conversion to ERUs. This conversion is accomplished using an algorithm that factors usage, area of resource within the noise analysis area and seasonal / daily usage.

2.1.1 Common Noise Environment 1

CNE 1 is comprised of agricultural, residential, and industrial land uses east of I-65 northbound, south of SR 160. Recent development of a residential neighborhood has begun at the southern extent of the project area and within the existing development approximately 0.5 mile south of SR 160. Residential receptors have been placed based upon the established lots which have been purchased by home owners based upon the Clark County GIS webpage (https://clarkin.elevatemaps.io/). The surrounding topography is gently rolling with elevations ranging between 479 to 578 feet above mean sea level (MSL). The main traffic noise source for this CNE is I-65.

2.1.2 Common Noise Environment 2

CNE 2 is comprised of residential and industrial land uses east of I-65 northbound, along SR 160. The surrounding topography generally slopes downward from I-65 with elevations of 562 to 581 feet above MSL. The main traffic noise sources for this CNE are I-65 and SR 160.

2.1.3 Common Noise Environment 3

CNE 3 is comprised of agricultural, residential, forested, religious, commercial, and industrial land uses east of I-65 northbound, north of SR 160. The surrounding topography is gently rolling with general elevations of 515 to 653 feet above MSL. The main traffic noise source for this CNE is I-65.

Three Activity Category C receptors, two at Clark State Forest and one at the I-65 northbound rest area picnic area, are located within this CNE. Since these amenities do not contain any dwelling units, the use of an algorithm to convert usage data into an appropriate number of receptors, or equivalent residential units (ERUs), was required. The standard INDOT algorithm for converting special use lands into ERUs is as follows:

Daily No. of Users / 2.52 people on average per household	X	Percentage of property within 500 ft.	=	Number of Receptors (Rounded Up)

Based upon the Indiana State Parks reservation webpage (https://indianastateparks.reserveamerica.com/), the shelter at the location of R214 has a maximum seating capacity of 50. In addition, other factors added to the algorithm included the average available usage time per day, and the average months over the course of a year the shelter area is likely to be used (i.e., spring, summer and fall). The total ERU's determined to be appropriate for modeling purposes was 5. The algorithm below was utilized to determine the appropriate ERUs.

				Avg. Usage Time / Day		Avg. Months of Usability		
50 (estimated daily users) / 2.52	X	0.3 ac. (within 500 ft.) / 0.3 ac. (total size)	X	8 hrs. / 24 hrs./day	X	9 mo. / 12 mo./yr.	=	**5 Total ERUs**

Based upon the Indiana State Parks reservation webpage (https://indianastateparks.reserveamerica.com/), there are 38 camping sites at the location of R86. Therefore an estimated 76 daily users (two occupants per site), was utilized. In addition, other factors added to the algorithm included the average months over the course of a year the camp sites are likely to be used (i.e., spring, summer and fall). The total ERU's determined to be appropriate for modeling purposes was 14. The algorithm below was utilized to determine the appropriate ERUs.

				Avg. Months of Usability		
76 (estimated daily campers) / 2.52	X	1.5 ac. (within 500 ft.) / 2.5 ac. (total size)	X	9 mo. / 12 mo./yr.	=	**14 Total ERUs**

Based upon the available traffic data (Appendix F), approximately 1,063 vehicles per day utilize the I-65 northbound rest area (R89). Additional factors added to the algorithm included the average usage time per day, and the average months over the course of a year the outdoor rest area picnic area is likely to be used (i.e., spring, summer and fall). The total ERU's determined to be appropriate for modeling purposes was 5. The algorithm below was utilized to determine the appropriate ERUs.

				Avg. Usage Time / Day		Avg. Months of Usability		
1,063 (estimated daily users) / 2.52	X	0.7 ac. (within 500 ft.) / 1 ac. (total size)	X	0.5 hrs. / 24 hrs./day	X	9 mo. / 12 mo./yr.	=	**5 Total ERUs**

2.1.4 Common Noise Environment 4

CNE 4 is comprised of agricultural, industrial, residential, and forested land uses west of I-65 southbound, north of SR 160. The surrounding topography is gently rolling with elevations ranging between 525 to 658 feet above MSL. The main traffic noise source for this CNE is I-65.

Three Activity Category C receptors, two at Clark State Forest and one at the I-65 southbound rest area picnic area, are located within this CNE. Since these amenities do not contain any dwelling units, the use of an algorithm to convert usage data into an appropriate number of receptors, or ERUs, was required.

Based upon the Indiana State Parks reservation webpage (https://indianastateparks.reserveamerica.com/), the shelter at the location of R186 has a maximum seating capacity of 40. In addition, other factors added to the algorithm included the average available usage time per day, and the average months over the course of a year the shelter area is likely to be used (i.e., spring, summer and fall). The total ERU's determined to be appropriate for modeling purposes was 4. The algorithm below was utilized to determine the appropriate ERUs.

$$\frac{\text{40 (estimated daily users)}}{2.52} \times \frac{\text{0.4 ac. (within 500 ft.)}}{\text{0.4 ac. (total size)}} \times \frac{\text{8 hrs.}}{\text{24 hrs./day}} \times \frac{\text{9 mo.}}{\text{12 mo./yr.}} = \textbf{4 Total ERUs}$$

(Avg. Usage Time / Day; Avg. Months of Usability)

Based upon the Indiana State Parks reservation webpage (https://indianastateparks.reserveamerica.com/), the shelter at the location of R215 has a maximum seating capacity of 75. In addition, other factors added to the algorithm included the average available usage time per day, and the average months over the course of a year the shelter area is likely to be used (i.e., spring, summer and fall). The total ERU's determined to be appropriate for modeling purposes was 8. The algorithm below was utilized to determine the appropriate ERUs.

$$\frac{\text{75 (estimated daily users)}}{2.52} \times \frac{\text{0.3 ac. (within 500 ft.)}}{\text{0.3 ac. (total size)}} \times \frac{\text{8 hrs.}}{\text{24 hrs./day}} \times \frac{\text{9 mo.}}{\text{12 mo./yr.}} = \textbf{8 Total ERUs}$$

(Avg. Usage Time / Day; Avg. Months of Usability)

Based upon the available traffic data (Appendix F), approximately 1,057 vehicles per day utilize the I-65 southbound rest area (R183). Additional factors added to the algorithm included the average usage time per day, and the average months over the course of a year the outdoor rest area picnic area is likely to be used (i.e., spring, summer and fall). The total ERU's determined to be appropriate for modeling purposes was 6. The algorithm below was utilized to determine the appropriate ERUs.

$$\frac{\text{1,057 (estimated daily users)}}{2.52} \times \frac{\text{0.9 ac. (within 500 ft.)}}{\text{1 ac. (total size)}} \times \frac{\text{0.5 hrs.}}{\text{24 hrs./day}} \times \frac{\text{9 mo.}}{\text{12 mo./yr.}} = \textbf{6 Total ERUs}$$

(Avg. Daylight / Day; Avg. Months of Usability)

2.1.5 Common Noise Environment 5

CNE 5 is comprised of forested and agricultural land uses west of I-65 southbound, along SR 160. The surrounding topography is generally flat with elevations ranging between 544 to 578 feet above MSL. The main traffic noise sources for this CNE are I-65 and SR 160.

2.1.6 Common Noise Environment 6

CNE 6 is comprised of agricultural, residential, and forested land uses west of I-65 southbound, south of SR 160. The surrounding topography is gently rolling with elevations ranging between 478 to 580 feet above MSL. The main traffic noise source for this CNE is I-65.

Two Activity Category C receptors associated with cemeteries (R191 and R192) are located within this CNE. Since the cemeteries do not function as prolonged recreational facilities, these amenities were applied one ERU each.

2.2 Field Measurements and Validation

For this analysis a Larson Davis Class 1 Integrating Sound Level Meter (SLM) / Analyzer 831 was used to obtain short-term field measurements of ambient noise levels at representative receptors in the analysis area. The field measurements were taken by personnel of American Structurepoint on June 3 and August 3, 2020. Short term measurements were collected for a duration of 15 minutes at 10 sites. The field data sheets for each measurement taken are included in Appendix B of this analysis. Prior to use, the SLM was calibrated to 94 dBA and 114 dBA using the appropriate calibrator for this model. The Certificate of Calibration for this SLM is included in Appendix C. During the sampling time atmospheric conditions and any unanticipated noise events were noted.

Short-term field measurements are typically collected and used to validate the constructed *TNM 2.5* model prepared for the existing conditions. In such cases, existing noise levels are generated from a baseline condition model, where field observed traffic counts over the 15 minute sampling period are multiplied times four for a Leq(h) volume equivalent and entered into the model. Sites are considered to be validated when the field measured reading is found to be within 3 dBA (+/-) of the modeled reading. The results of the validation effort are illustrated in Table 2-4 below.

TABLE 2-4 – MODEL VALIDATION

Site No.	CNE No.	Measured Level (dBA)	Modeled Level (dBA)	Difference	Validated
FM 1	6	68.7	71.2	-2.5	Yes
FM 2	1	68.2	67.7	0.5	Yes
FM 3	3	64.8	67.4	-2.6	Yes
FM 4	3	65.7	68.3	-2.6	Yes
FM 5	4	67.4	70.0	-2.6	Yes
FM 6	4	58.1	59.5	-1.4	Yes
FM 7	3	63.7	66.7	-3.0	Yes
FM 8	3	60.6	62.9	-2.3	Yes
FM 9	3	61.1	60.9	0.2	Yes
FM 10	3	72.1	71.4	0.7	Yes

As noted in Table 2-4, all 10 of the sites modeled were validated. Therefore the noise models developed for this analysis are considered to be valid.

3.0 Methodology and Assumptions

This noise analysis is developed as part of the National Environmental Policy Act (NEPA) environmental documentation for the project. In accordance with 23 Code of Federal Regulations (CFR) Part 772, FHWAs Highway *Traffic Noise: Analysis and Abatement Guidance (December 2011)* and the INDOT *Traffic Noise Analysis Procedure*

(July 1, 2017), design year (2043) noise exposure levels were predicted using FHWAs approved noise modeling software, *TNM 2.5*.

3.1 Noise Abatement Criteria

The FHWA has developed NAC that INDOT has adopted in their *Traffic Noise Analysis Procedure* (Table 3-1). These criteria define when noise impacts occur for specific types of land uses. Because Part 772 of 23 CFR defines potential impacts in terms of noise levels approaching or exceeding the NAC and INDOT's *Traffic Noise Analysis Procedure* defines approaching as one decibel (dBA), the effective value for impact analysis in Indiana is one dBA less than the FHWA criteria.

TABLE 3-1 - Noise Abatement Criteria

Activity Category	FHWA Activity Criteria Leq(h)	INDOT Approach Criteria Leq(h)	Evaluation Location	Activity Description
A	57 dBA	56 dBA	Exterior	Land uses on which serenity and quiet are of extraordinary significance and serve an important public need. The preservation of those qualities is essential if the area is to continue to serve its intended purpose.
B	67 dBA	66 dBA	Exterior	Residential
C	67 dBA	66 dBA	Exterior	Active sport areas, amphitheaters, auditoriums, campgrounds, cemeteries, day care centers, hospitals, libraries, medical facilities, parks, picnic areas, places of worship, playgrounds, public meeting rooms, public or nonprofit institutional structures, radio studios, recording studios, recreation areas, Section 4(f) sites, schools, television studios, trails, and trail crossings.
D	52 dBA	51 dBA	Interior	Auditoriums, day care centers, hospitals, libraries, medical facilities, places of worship, public meeting rooms, public or nonprofit institutional structures, radio studios, recording studios, schools, and television studios.
E	72 dBA	71 dBA	Exterior	Hotels, motels, offices, restaurants/bars, and other developed lands, properties or activities not included in A-D or F.
F	--	--	--	Agriculture, airports, bus yards, emergency services, industrial, logging, maintenance facilities, manufacturing, mining, rail yards, retail facilities, shipyards, utilities (water resources, water treatment, electrical), and warehousing.
G	--	--	--	Undeveloped lands that are not permitted.

Source: FHWA Highway *Traffic Noise: Analysis and Abatement Guidance (December 2011)* and INDOT *Traffic Noise Analysis Procedure (2017)*

For this analysis, Activity Categories B, C, D, F, and G land uses were identified within the analysis area.

3.2 Traffic Volumes

Traffic volumes were taken from the *April 29, 2020 Project Traffic Forecast Report DES No.: 1700135* – by INDOT, Office of Traffic Statistics for I-65. Base Year (2016 to 2018) AADT volumes were obtained from the INDOT Traffic Count Database System and used to determine volumes on appropriate cross streets. The volumes are illustrated in Appendix F of this report.

3.3 Model Assumptions

The following TNM 2.5 model assumptions were incorporated into the analysis of this project:

- Traffic volumes were assigned to the appropriate TNM vehicle classifications. For the purposes of this analysis, automobiles and heavy trucks were designated the appropriate vehicle classifications for 2021 and 2043 projections. Assignments were not made to the medium truck, motorcycle or bus classifications.
- The percent heavy vehicles used and vehicle speeds can be found in Appendix F.
- Traffic volumes were not included along the remainder of auxiliary roadways due to the low traffic volumes and utilization as residential access.
- Terrain lines and building rows were included within the model. The default ground zone was lawn.
- Noise Reduction Coefficient (NRC) values of 0.7 were utilized for noise barriers with receptors present on the opposite side of the roadway.

4.0 Impact Assessment

The analysis of the proposed I-65 Added Travel Lanes project was completed using the FHWA's approved model for predicting noise levels associated with highway projects, *TNM 2.5*. TNM generated noise emission levels for the project, which are reported in dBA, and compared against the NAC thresholds identified in **Table 3-1** to determine whether a receptor is impacted. As defined in the INDOT *Traffic Noise Analysis Procedures (2017)*, a traffic noise impact occurs if one of the following criteria is found to be true:

- Predicted dBA levels approach (within at least 1 dBA) or exceed the FHWA NAC identified in **Table 3-1**, or
- Predicted dBA levels substantially exceed the existing ambient levels (at least 15 dBA above the existing conditions).

FHWA assesses noise impacts based upon the Leq(h). That is, a receptors cumulative noise exposure from all events over a one hour period. The one hour period used for highway projects is identified as the peak travel hour, or busiest hour of the day. To evaluate interior noise levels the exterior level was modeled and a reduction factor applied (Table 4-1). Based upon the completed analysis, 109 receptors were identified as approaching or exceeding the NAC. No receptors were identified as having predicted levels substantially exceeding the existing ambient levels. The noise level at the 109 impacted receptors range from 66.0 to 75.8 dBA. A breakdown of impacted receptors per CNE is provided in Table 4-2 below.

TABLE 4-1 - Category D Noise Levels

Receptor	Description	Exterior Noise Level (dBA)	Noise Reduction due to Structural Criteria (dBA)	Interior Noise (dBA)	Interior Criteria (dBA)	Impact
R145	Church	68.1	25	43.1	51.0	No
R147	Church	67.3	25	42.3	51.0	No

TABLE 4-2 - Impacted Receptors by CNE

	Number of Impacted Receptors
CNE 1	26
CNE 2	0
CNE 3	39
CNE 4	29
CNE 5	0
CNE 6	15

5.0 Noise Abatement

Consideration of measures to mitigate or abate traffic noise impacts must be afforded if impacted receptors have been identified in the analysis area. In order for abatement to be considered and implemented into the project it must undergo scrutiny to determine if it is both feasible and reasonable to construct. The definition of feasible and reasonable is identified in the INDOT *Traffic Noise Analysis Procedures (2017)*, but is summarized below.

Noise abatement is **feasible** if it meets all of the following conditions:

Engineering Feasibility:

- Engineering considerations to determine if a particular form of abatement can actually have an effect on the traffic noise levels at a receptor. These considerations include topography, drainage, barrier height, utilities, safety and access / maintenance needs control.

Acoustic Feasibility:

- A majority (greater than 50%) of the impacted receptors achieve a 5 dBA reduction in noise.

The **reasonableness** of noise abatement is based on a measured design goal for noise abatement, cost effectiveness and views of impacted receptors:

Design Goal:

- A majority of the impacted first row receptors achieve at least a 7 dBA reduction in noise.

Cost Effectiveness:

- The estimated cost of constructing a noise barrier does not exceed $25,000 per benefited receptor. In those cases where a majority of the development (more than 50%) was in place prior to construction of the highway in its current functional classification, a barrier is considered cost effective if the estimated cost does not exceed $30,000 per benefited receptor.

Views of the Impacted and/or Benefited Receptors:

- A survey will be mailed to each benefited receptor to consider the views of residents and property owners. The concerns and opinions of the property owners and residents will be balanced with other considerations in determining whether a barrier is appropriate for a given location.

5.1 Traffic Noise Barriers

The construction of noise barriers is often viewed as an effective way to shield or deflect the noise exposure path between the source (i.e., road) and the impacted receptors. Traditionally, constructed noise barriers are a post and precast panel system. With the post and precast panel wall, steel posts are driven into the ground followed by the installation of several noise absorbing panels between the posts. Several factors weigh into determining

the feasibility of a barrier. Both barrier types need to be allowed to extend uninterrupted (i.e., no drive access points, utility crossings) the length of area it is intended to shield. Additionally, the barrier length needs to extend at either end approximately four times the distance between the noise source and receptor to adequately deflect noise that spills around the end of the barrier. The barrier should also avoid interference with the line of sight at intersections, which could affect a driver's ability to see approaching traffic and create an unsafe condition to enter roadway. The inability to address these factors weighs heavily in the consideration of barrier abatement as a feasible measure of mitigation.

Noise barriers were modeled at twenty-two locations within the study area. Noise Barrier (NB) 2 and 6 were conducted as representative isolated receptors (R12 and R88). Because it was determined at these locations that a noise barrier is not cost effective for an isolated receptor, noise barriers were not analyzed at the remaining isolated receptors within the project area (R87, R122, R146, R148, R158, R168, R177, and R184). Due to the inability to construct uninterrupted segments of noise barriers due to access and line of sight requirements, a noise barrier was not evaluated for R89. The analyzed barriers are described below:

- NB 1: NB 1 is located along the east side of I-65 northbound lanes, south of the Biggs Road overpass in CNE 1. This noise barrier location analyzes impacts to receivers R1 to R11.
- NB 2: NB 2 is located along the east side of I-65 northbound lanes and is bisected by Biggs Road in CNE 1. NB 2 was modeled as two segments, NB 2a and NB 2b. This noise barrier location analyzes impacts to receiver R12.
- NB 3: NB 3 is located along the east side of I-65 northbound lanes, north of Biggs Road and south of SR 160 in CNE 1. This noise barrier location analyzes impacts to receivers R15 to R45.
- NB 4: NB 4 is located along the east side of I-65 northbound lanes, just south of SR 160 in CNE 1. This noise barrier location analyzes impacts to receivers R46 to R57.
- NB 5: NB 5 is located along the east side of I-65 northbound lanes, just north of SR 160 in CNE 3. This noise barrier location analyzes impacts to receiver R72 to R85.
- NB 6: NB 6 is located along the east side of I-65 northbound lanes, just north of Brownstown Road in CNE 3. This noise barrier location analyzes impacts to receiver R88.
- NB 7: NB 7 is located along the east side of I-65 northbound lanes, approximately 0.5 mile north of CR 600 S in CNE 3. This noise barrier location analyzes impacts to receivers R94 to R101.
- NB 8: NB 8 is located along the east side of I-65 northbound lanes, approximately 1 mile south of Leota Road in CNE 3. This noise barrier location analyzes impacts to receivers R102 to R115.
- NB 9: NB 9 is located along the east side of I-65 northbound lanes and is bisected by Leota Road in CNE 3. This noise barrier location analyzes impacts to receivers R117 to R121.
- NB 10: NB 10 is located along the east side of I-65 northbound lanes, north of Lake Road and south of SR 56 in CNE 3. This noise barrier location analyzes impacts to receivers R126 to R145.
- NB 11 NB 11 is located along the west side of I-65 southbound lanes and is bisected by Lake Road in CNE 4. NB 11 was modeled as two segments, NB 11a and NB 11b.This noise barrier location analyzes impacts to receivers R149 to R152.
- NB 12: NB 12 is located along the west side of I-65 southbound lanes, just south of Lake Road in CNE 4. This noise barrier location analyzes impacts to receivers R153 to R157.
- NB 13: NB 13 is located along the west side of I-65 southbound lanes, just south of Leota Road in CNE 4. This noise barrier location analyzes impacts to receivers R159 to 161.
- NB 14: NB 14 is located along the west side of I-65 southbound lanes, approximately 0.5 mile south of Leota Road in CNE 4. This noise barrier location analyzes impacts to receivers R162 to R167 and R216.
- NB 15: NB 15 is located along the west side of I-65 southbound lanes, approximately 0.5 mile north of CR 600 N in CNE 4. This noise barrier location analyzes impacts to receivers R170 to R171.

- NB 16: NB 16 is located along the west side of I-65 southbound lanes, approximately 0.2 mile north of CR 600 N in CNE 4. This noise barrier location analyzes impacts to receivers R172 to R173.
- NB 17: NB 17 is located along the west side of I-65 southbound lanes, approximately 1 mile south of CR 600 N in CNE 4. This noise barrier location analyzes impacts to receivers R178 to R182.
- NB 18: NB 18 is located along the west side of I-65 southbound lanes, approximately 0.2 mile north of Winding Road in CNE 4. This noise barrier location analyzes impacts to receiver R215.
- NB 19: NB 19 is located along the west side of I-65 southbound lanes, just north of Winding Road in CNE 4. This noise barrier location analyzes impacts to receiver R186.
- NB 20: NB 20 is located along the west side of I-65 southbound lanes, just south of SR 160 in CNE 6. This noise barrier location analyzes impacts to receivers R191 to R199.
- NB 21: NB 21 is located along the west side of I-65 southbound lanes, approximately 0.7 mile south of SR 160 in CNE 6. This noise barrier location analyzes impacts to receivers R200 to R204.
- NB 22: NB 22 is located along the west side of I-65 southbound lanes, approximately 2 miles south of SR 160 in CNE 6. This noise barrier location analyzes impacts to receivers R207 to R212.

Of the twenty-two noise barriers modeled, one meets the INDOT's feasible and reasonable criteria. NB 3 was determined to meet feasible and reasonable criteria. NB 1 and NB 4 through NB 22 were determined to meet feasible criteria but not meet cost effectiveness criteria to be considered reasonable. NB 2 was determined to not meet feasible or reasonable criteria. The results of the noise barrier analysis are summarized in Table 5-1 below. Maps showing the noise barrier locations and noise receptors are located in Appendix A, Page A-18 to A-27. Tables showing the optimization and analysis of the noise barriers are located in Appendix E, Page E-1 to E-22.

TABLE 5-1 – Noise Barrier Analysis Summary

Proposed Barrier	CNE	Length (feet)	Average Height (feet)	Benefited Receptors*	Feasibility Criteria Met	Design Goal Met	Cost of Barrier (assuming $30/sq ft)	Cost per Benefited Receptor	Cost Effective Threshold**	Cost Reasonable Criteria Met
NB 1	1	975	13.54	5	Yes	Yes	$ 395,860.00	$ 79,172.00	$25,000	No
NB 2	1	1,025	22.00	0	No	No	N/A	N/A	$25,000	No
NB 3	1	1,485	13.80	25	Yes	Yes	$ 614,786.00	$ 24,591.44	$25,000	Yes
NB 4	1	990	15.09	5	Yes	Yes	$ 448,125.00	$ 89,625.00	$30,000	No
NB 5	3	1,969	13.62	12	Yes	Yes	$ 804,511.00	$ 67,042.58	$25,000	No
NB 6	3	743	17.39	1	Yes	Yes	$ 347,470.00	$ 347,470.00	$25,000	No
NB 7	3	982	15.49	4	Yes	Yes	$ 456,390.00	$ 114,097.50	$30,000	No
NB 8	3	1,350	14.22	12	Yes	Yes	$ 575,982.00	$ 47,998.50	$30,000	No
NB 9	3	975	14.46	3	Yes	Yes	$ 422,991.00	$ 40,997.00	$25,000	No
NB 10	3	1,826	19.75	15	Yes	Yes	$ 1,082,194.00	$ 72,146.27	$25,000	No
NB 11	4	1,506	16.18	4	Yes	Yes	$ 730,882.00	$ 182,720.50	$25,000	No
NB 12	4	911	12.52	3	Yes	Yes	$ 342,062.00	$ 114,020.67	$25,000	No

Proposed Barrier	CNE	Length (feet)	Average Height (feet)	Benefited Receptors*	Feasibility Criteria Met	Design Goal Met	Cost of Barrier (assuming $30/sq ft)	Cost per Benefited Receptor	Cost Effective Threshold**	Cost Reasonable Criteria Met
NB 13	4	975	15.54	2	Yes	Yes	$ 454,489.00	$ 227,244.50	$25,000	No
NB 14	4	2,700	14.59	6	Yes	Yes	$ 1,181,940.00	$ 196,990.00	$25,000	No
NB 15	4	999	15.85	2	Yes	Yes	$ 475,097.00	$ 237,548.50	$25,000	No
NB 16	4	838	18.39	2	Yes	Yes	$ 462,366.00	$ 231,183.00	$25,000	No
NB 17	4	1,682	15.73	3	Yes	Yes	$ 793,976.00	$ 264,658.67	$25,000	No
NB 18	4	756	13.97	8	Yes	Yes	$ 316,874.00	$ 39,609.25	$30,000	No
NB 19	4	614	20.24	4	Yes	Yes	$ 372,901.00	$ 93,225.25	$30,000	No
NB 20	6	1,886	14.00	8	Yes	Yes	$ 792,027.00	$ 99,003.38	$25,000	No
NB 21	6	1,453	20.66	4	Yes	Yes	$ 900,534.00	$ 225,133.50	$25,000	No
NB 22	6	2,062	14.98	6	Yes	Yes	$ 791,820.00	$ 131,978.67	$25,000	No

**ERUs were utilized for this value on appropriate receptors discussed in Section 2.1 above*

***A cost effective threshold of $30,000 was utilized where a majority of receptors were constructed prior to I-65 in its current functional classification. A cost effective threshold of $25,000 was utilized where a majority of receptors were constructed after I-65 in its current functional classification.*

5.2 Additional Noise Abatement Measures

Additional noise abatement measures considered for this project include the restriction or prohibiting of truck traffic, altering of the horizontal and vertical alignments, acquisition of property for construction of berms, and acquisition of buffer zones to prevent development that could be adversely impacted.

The restriction or prohibiting of trucks traffic along I-65 is beyond the scope of this project and would require changes in legislation. Alteration of the horizontal and vertical alignment within the current right-of-way and design criteria would not provide sufficient changes in the traffic noise levels to the abutting properties. The current project proposes to maintain the existing alignment along I-65 and add the additional travel lanes to the median, away from abutting properties. Acquisition of property for construction of berms or as a buffer zone was not considered reasonable as it would require a substantial amount of additional right-of-way.

6.0 Construction Noise

The identified receptors will be affected by the noise generated from power-operated equipment utilized during construction. This equipment will be operated intermittently and will likely produce noise in the range of 70-98 dBA, with louder experiences occurring at those receptors closest to the construction limits. To minimize these impacts, construction equipment should be operated in compliance with all applicable local noise ordinances and regulations pertaining to construction noise for Clark County, Scott County, Henryville, and Scottsburg. Also, restricting construction activities to daytime working hours may help minimize construction noise impacts during

nighttime hours. The project plans and specifications should include provisions requiring the contractor to make every reasonable effort to minimize construction noise through abatement measures such as work-hour controls and maintenance of muffler systems. If such measures are applied, the temporary effects to the nearby receptors should be minimized.

7.0 Coordination with Local Officials

Conflicts with future development along the proposed corridor are able to be minimized with appropriate noise compatible planning. This effort starts with knowledge about a project's specific noise impacts being shared with those local officials having the decision-making authority over the planning and zoning status of land within the analysis area. In accordance with the *INDOT Traffic Noise Analysis Procedure (July 1, 2017) and 23 CFR 772.15* this report will be provided to the City of Scottsburg and Clark County Area Planning Organizations following the completion of the environmental document. This is typically done to allow the local government planning branches to protect incompatible land use types, such as Activity Categories B and C, from developing within the approximate 66 dBA contour.

The 66 dBA contour is an estimation of the future receptor impact zone following construction of the project. The 66 dBA contour for the proposed project is estimated to occur 340 feet from the I-65 edge of pavement south of SR 160 and 285 feet from the I-65 edge of pavement north of SR 160, varying slightly depending on topography (Appendix A, Page A-18 to A-27).

8.0 Public Involvement

As stated in the *INDOT Traffic Noise Analysis Procedure*, INDOT is required to seek the input of owners and residents of all benefited properties. The concerns and opinions of the property owners and the unit occupants will be taken into consideration in determining whether a barrier is appropriate for a given location. This information will be gathered during the public involvement process that will commence following the approval of this *Noise Analysis Report* and the results of this process will be detailed in a *Final Noise Analysis Report*.

9.0 Statement of Likelihood

Based upon the analysis completed to date, 109 impacted receptors have been identified and it has been determined that noise abatement is likely, but not guaranteed, at one location. Noise abatement at this location is based on preliminary design costs and criteria. Noise abatement at this location has been estimated at $614,786. A re-evaluation of the noise analysis will occur during final design. If during final design it is determined the conditions have changed such that noise abatement is not feasible and reasonable, the abatement measures might not be provided.

The final decision on the installation of any abatement measures will be made upon the completion of the project's final design and public involvement process.

10.0 Conclusion

A total of 109 receptors were identified within the noise analysis area as approaching/exceeding the NAC in the 2043 design year. Twenty-two noise barrier locations were evaluated within the noise analysis area. One noise barrier location (NB 3) was determined to be feasible and reasonable; located along the east side of I-65 northbound lanes, approximately 0.5 mile south of SR 160. Noise abatement at this location is based upon preliminary estimated costs and design criteria. Noise abatement is likely, but not guaranteed at this location. Additional information regarding the evaluated noise barriers is provided in Appendix E.

11.0 References

Environmental Protection Agency Publication EPAPB 206717, December 1971, *Noise from Construction Equipment and Operations.*

Federal Highway Program Manual, Volume 7, Section 3, August 9, 1982.

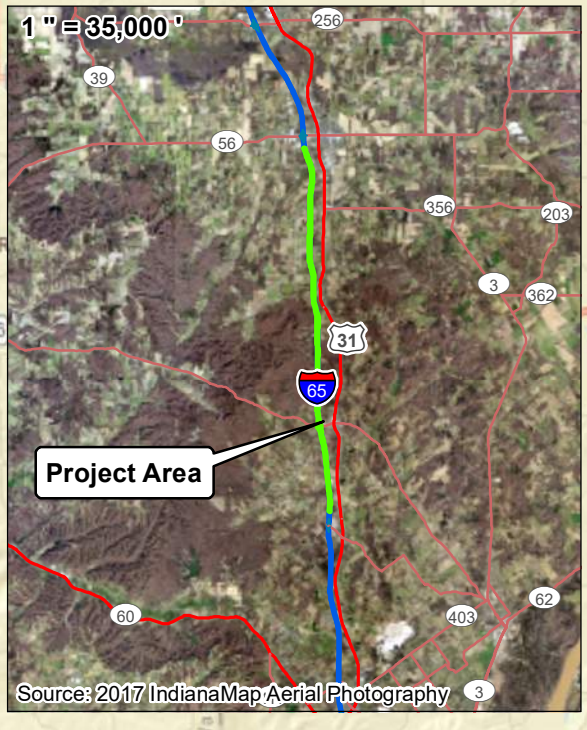
23 CFR 772, *Procedures for Abatement of Highway Traffic Noise and Construction Noise*, July 13, 2010.

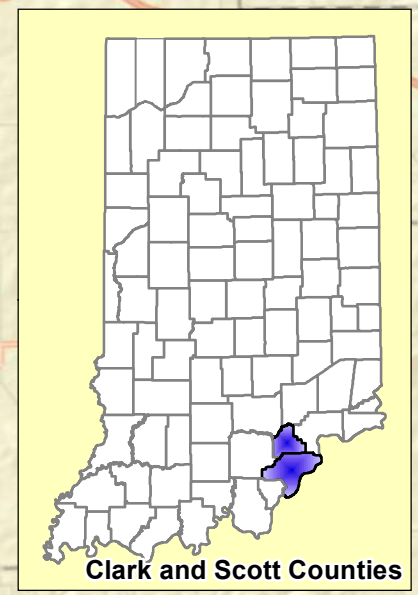
FHWA *Highway Traffic Noise: Analysis and Abatement Guidance,* December 2011.

Federal Highway Administration, *Federal Lands Highway Project Development and Design Manual*, February 8, 2008.

INDOT *Traffic Noise Analysis Procedure*, July 1, 2017.

Appendix A – Project Mapping





Source: ESRI World Street Map

Not to Scale

Project Area

Scottsburg

Underwood

Henryville

Memphis

Figure 1: State Location Map

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INDOT Seymour District
185 Agrico Lane
Seymour, IN 47274

I-65 Added Travel Lanes from 0.5 mile north of Blue Lick Road to 0.5 mile south of SR 56
Des. No. 1700135
Location: Scottsburg & Henryville
Township: Union, Monroe, and Vienna
County: Clark and Scott Counties
Date:01/12/2021 State: Indiana

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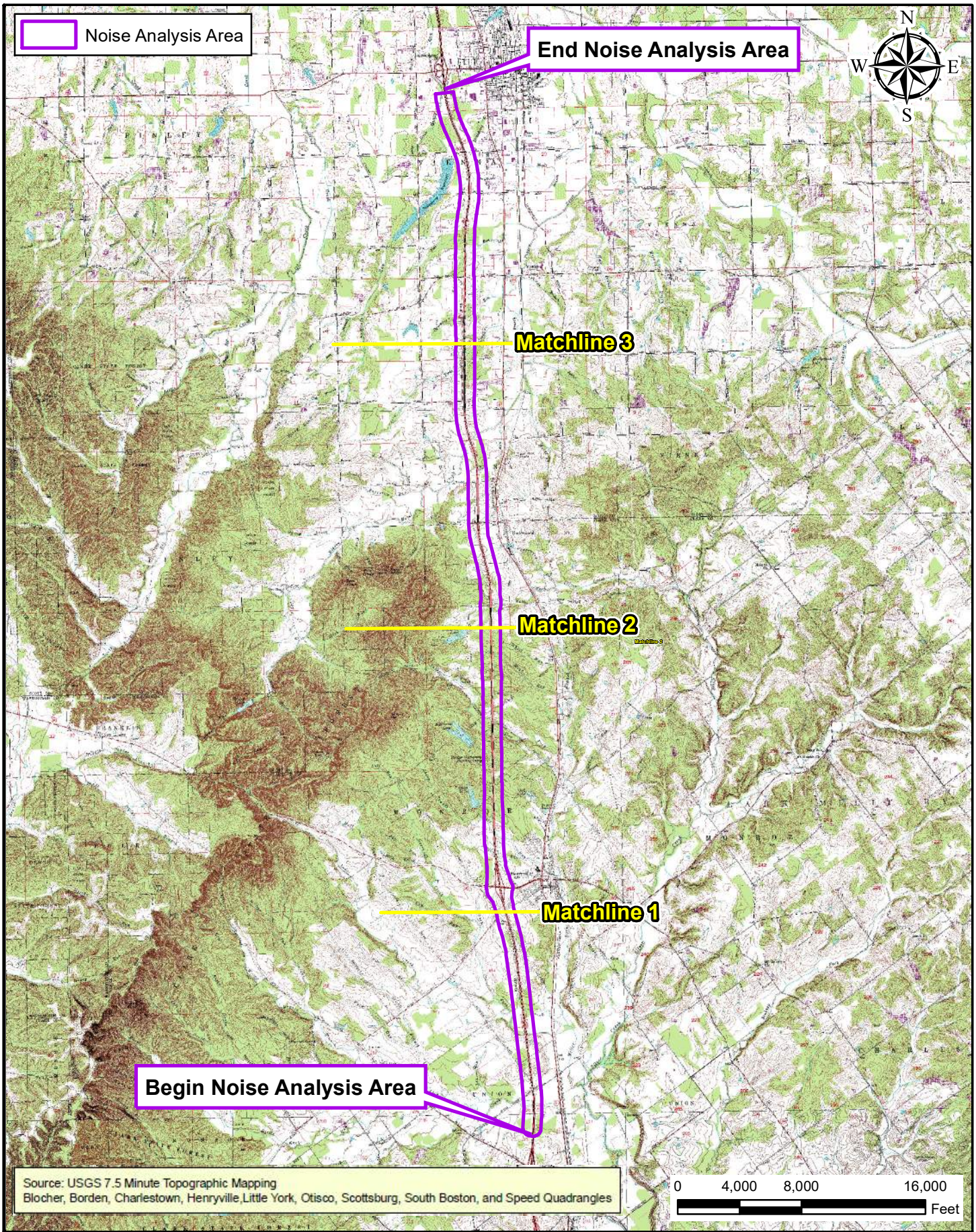

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Figure 2: USGS Topographic Mapping - Map Key

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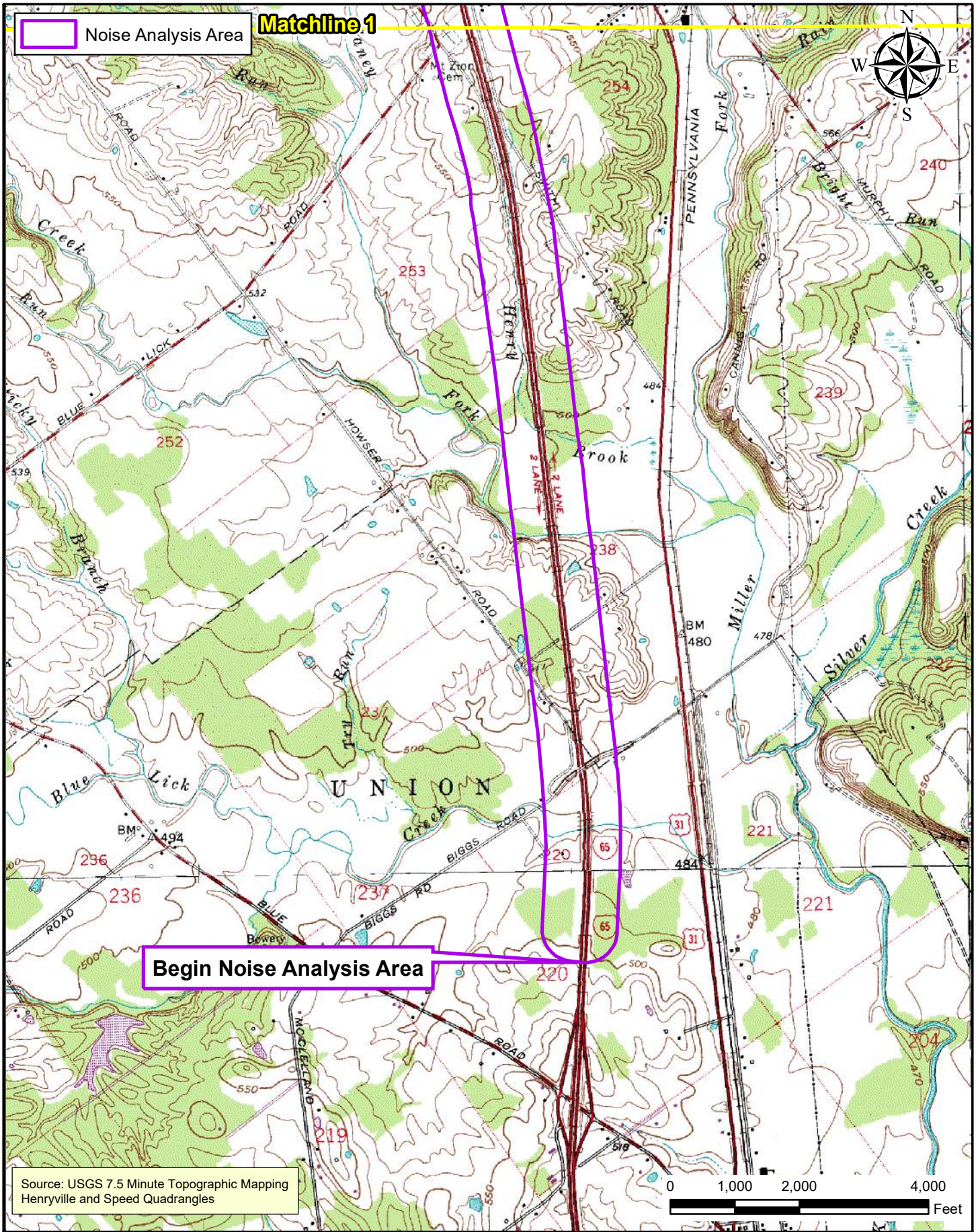

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Figure 2: USGS Topographic Mapping - Map 1 of 4

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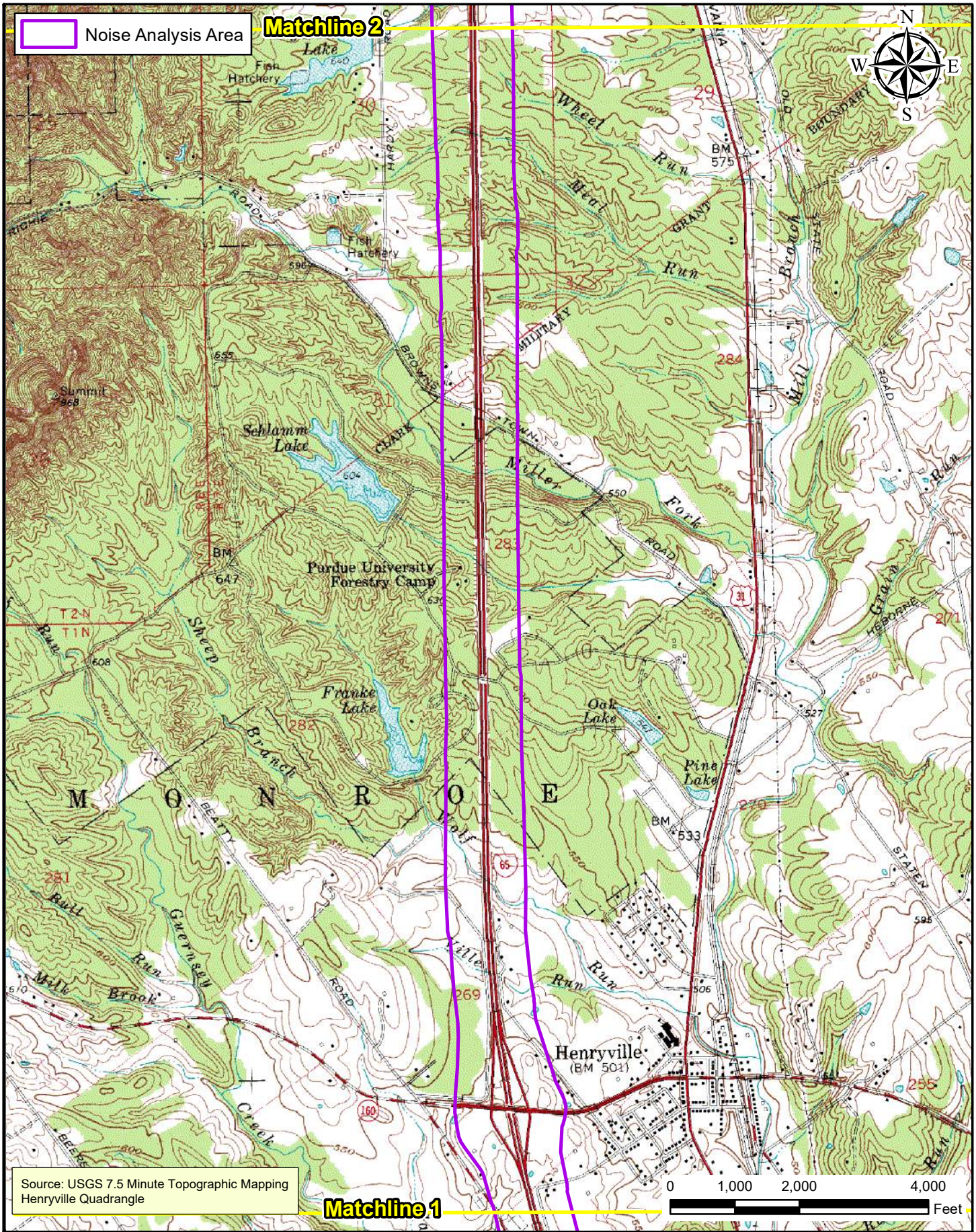

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Figure 2: USGS Topographic Mapping - Map 2 of 4

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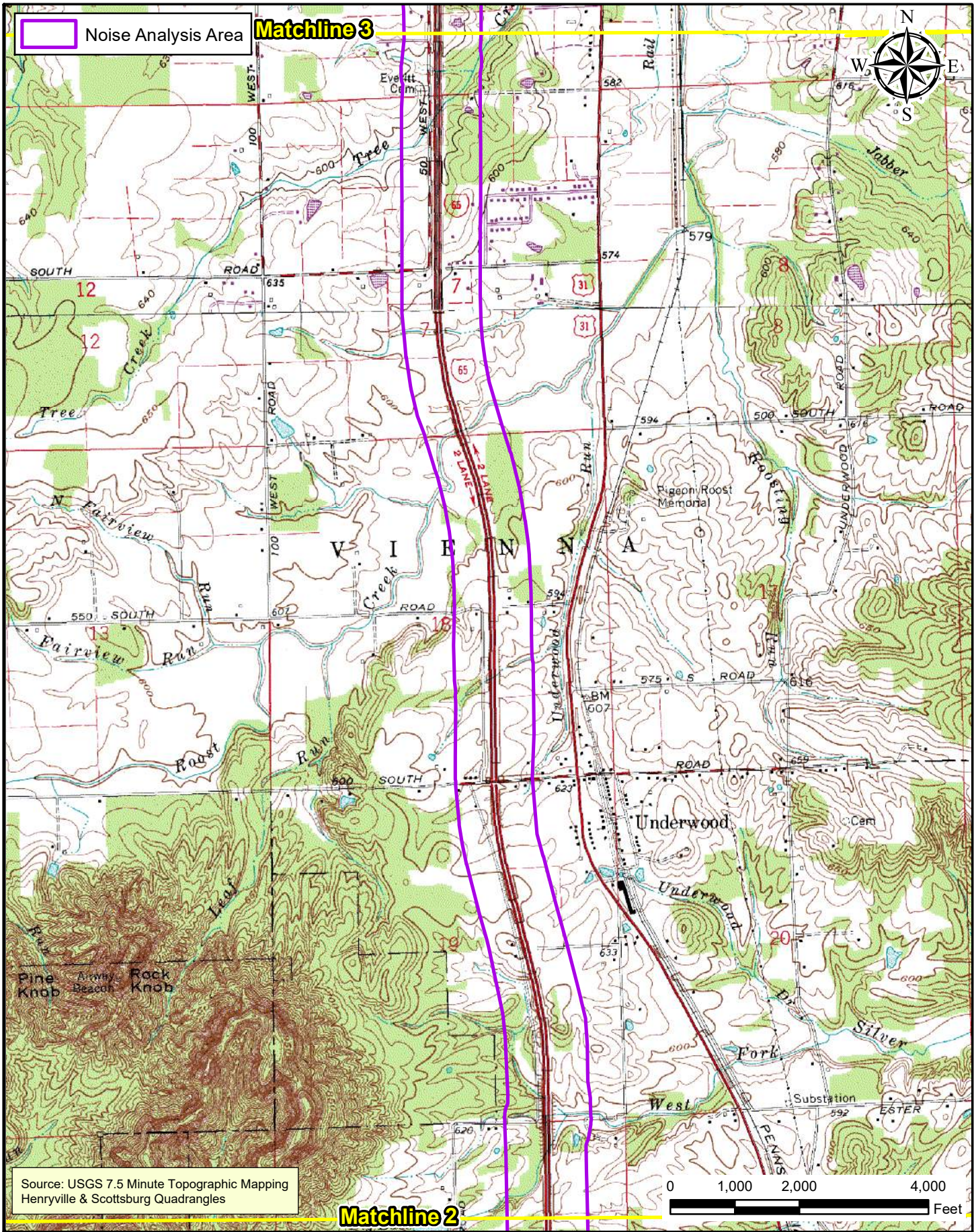

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Figure 2: USGS Topographic Mapping - Map 3 of 4

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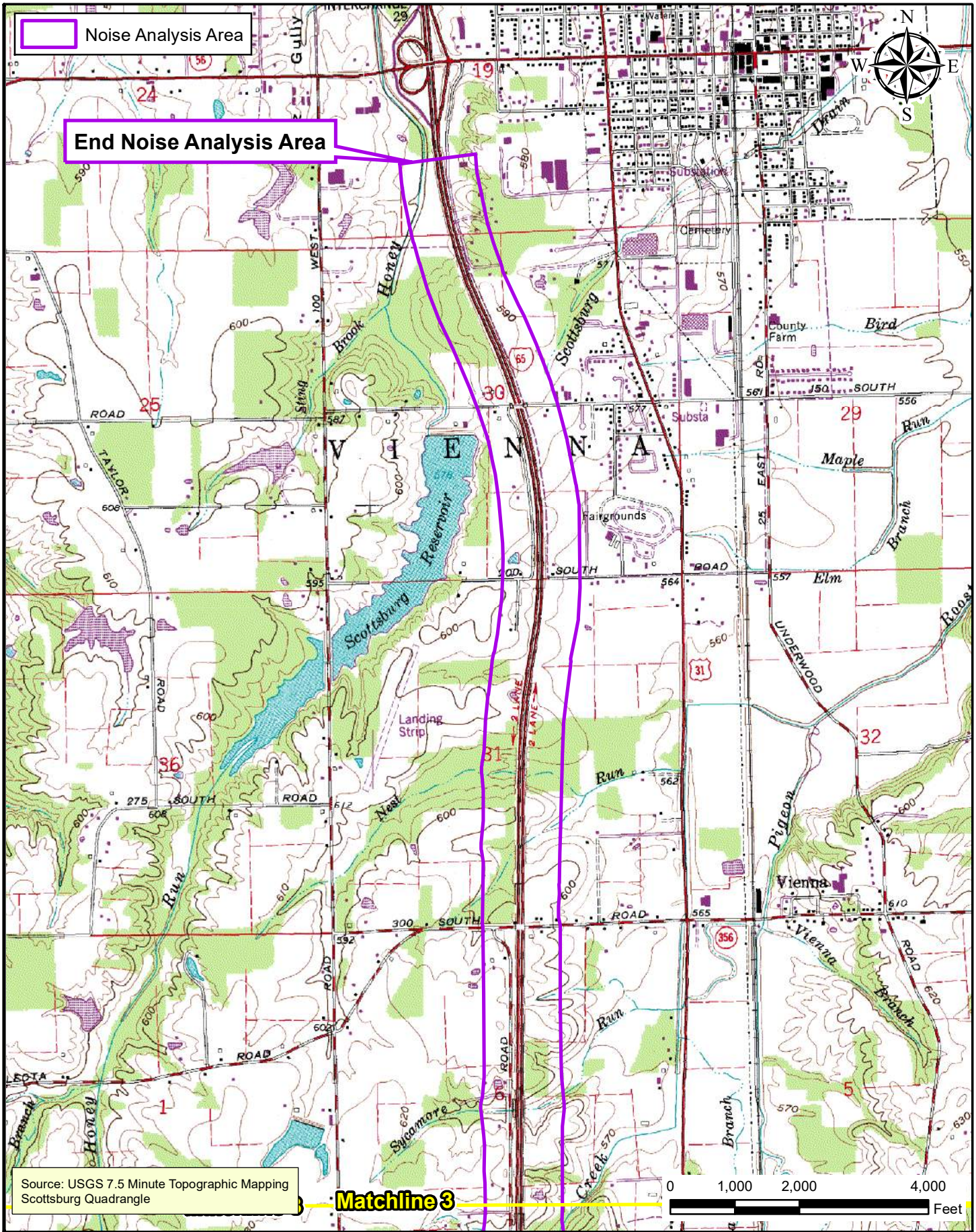

Source: USGS 7.5 Minute Topographic Mapping
Scottsburg Quadrangle

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Figure 2: USGS Topographic Mapping - Map 4 of 4

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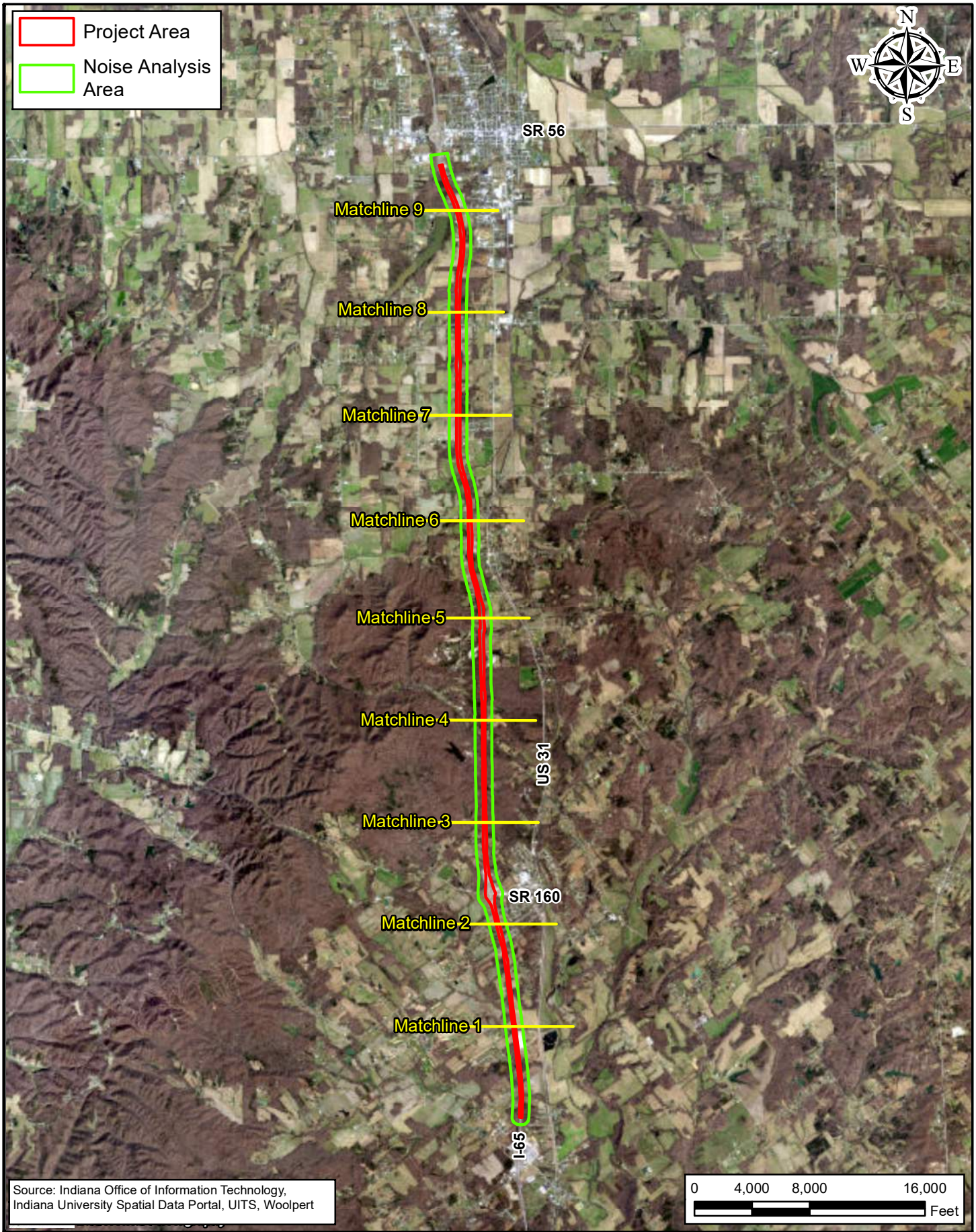

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Figures 3 & 4: Matchline Key

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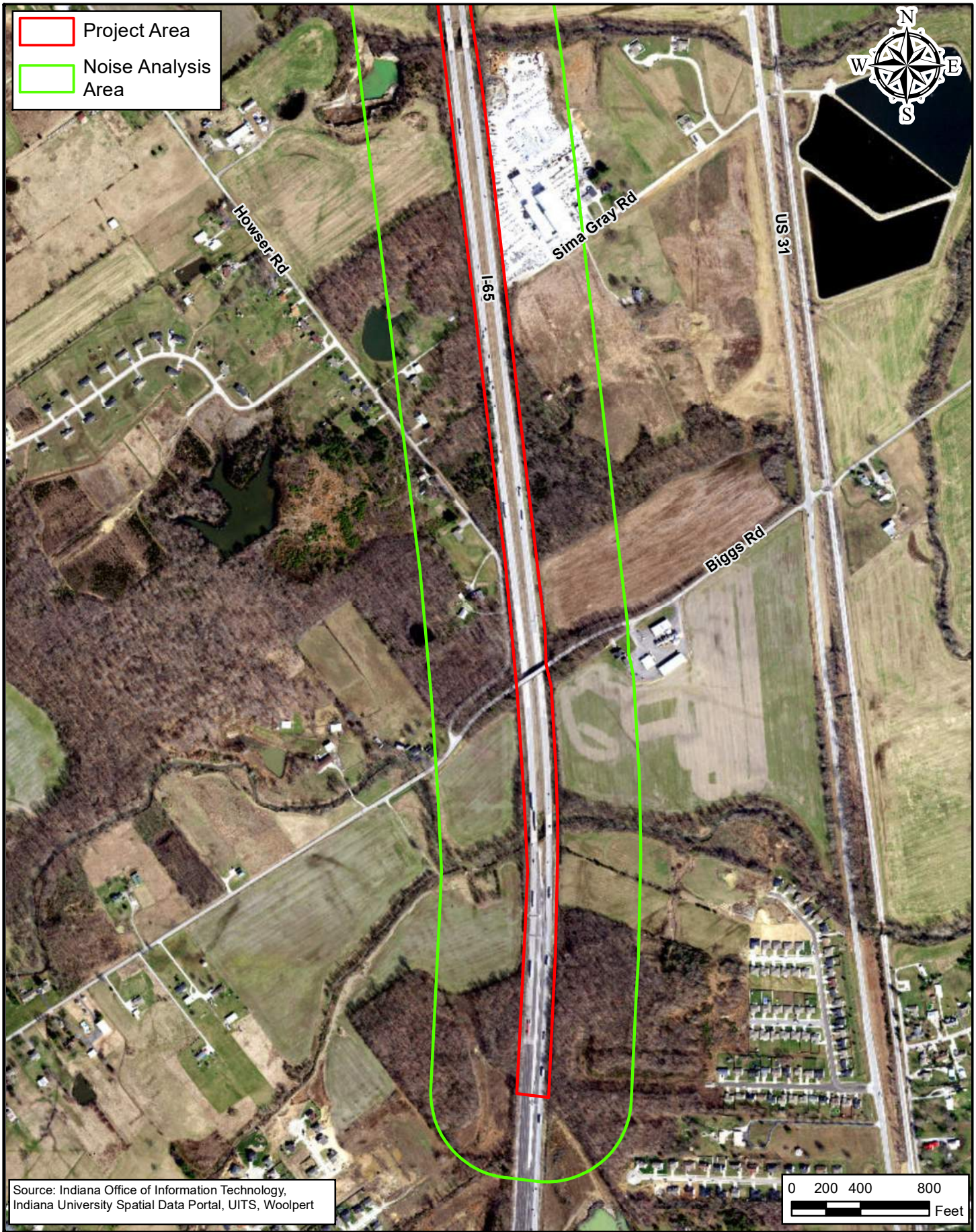

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Figure 3: 2017 Aerial Photography
Map 1 of 10

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Figure 3: 2017 Aerial Photography
Map 2 of 10

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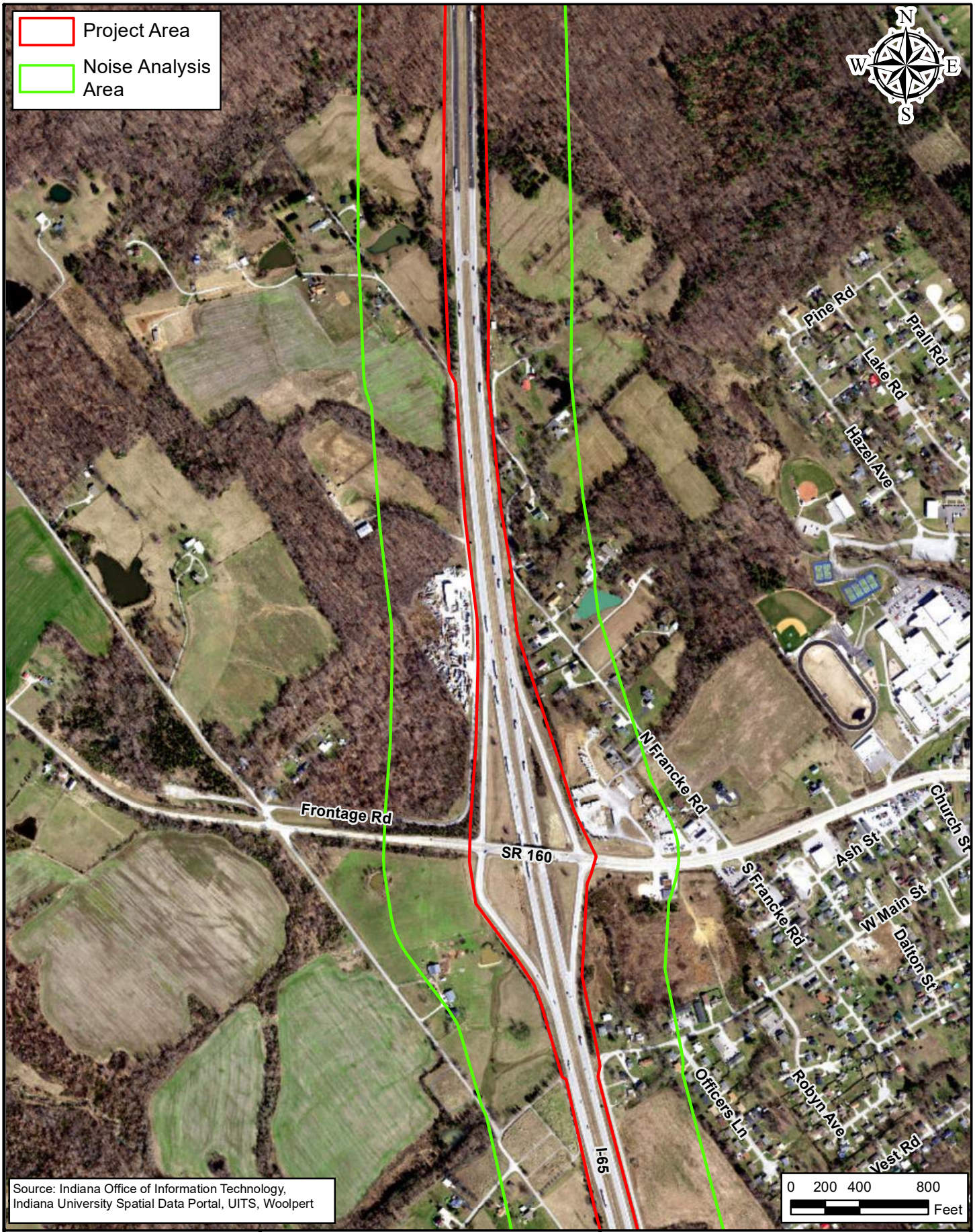

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Map 3 of 10

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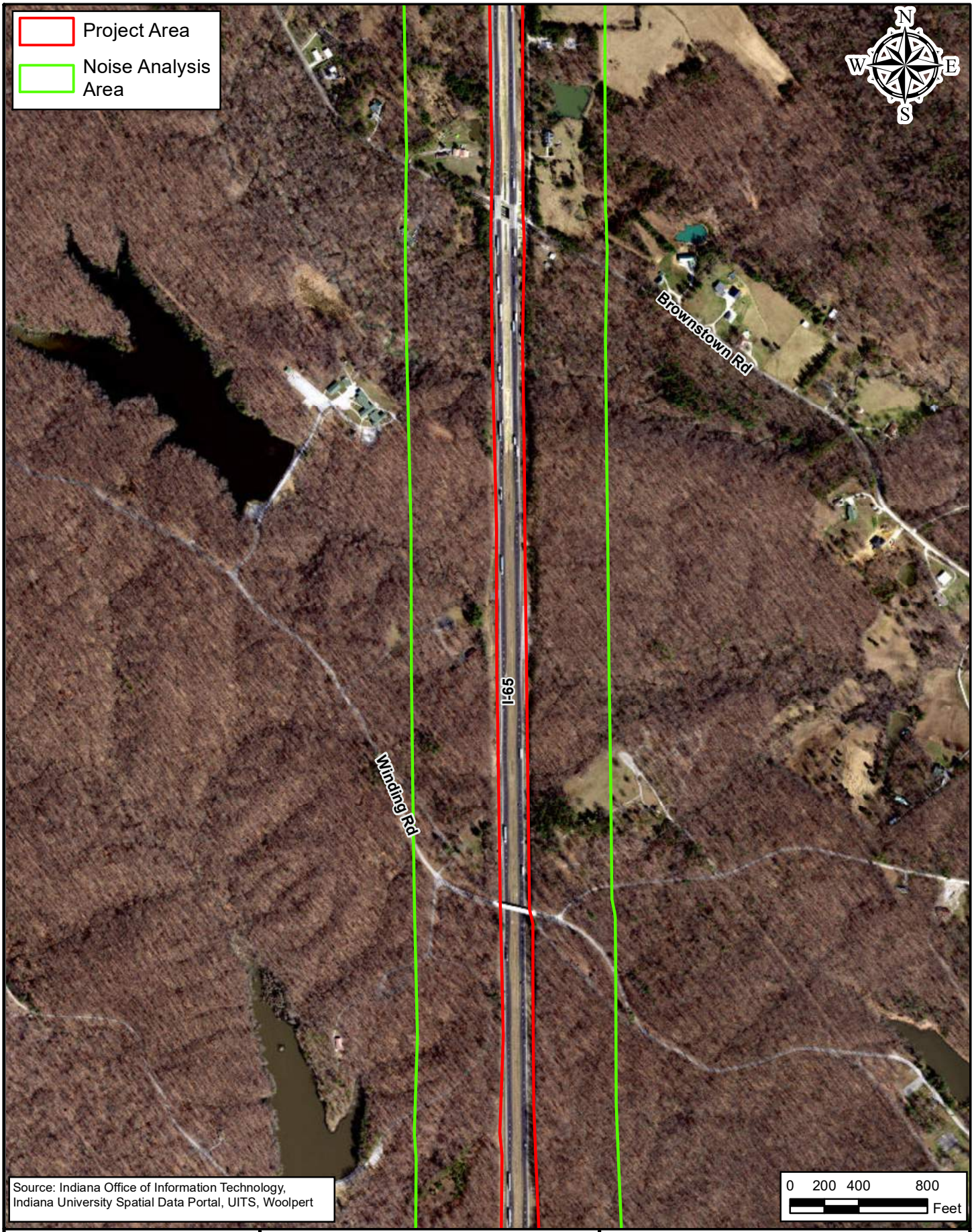

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Figure 3: 2017 Aerial Photography
Map 4 of 10

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Map 5 of 10

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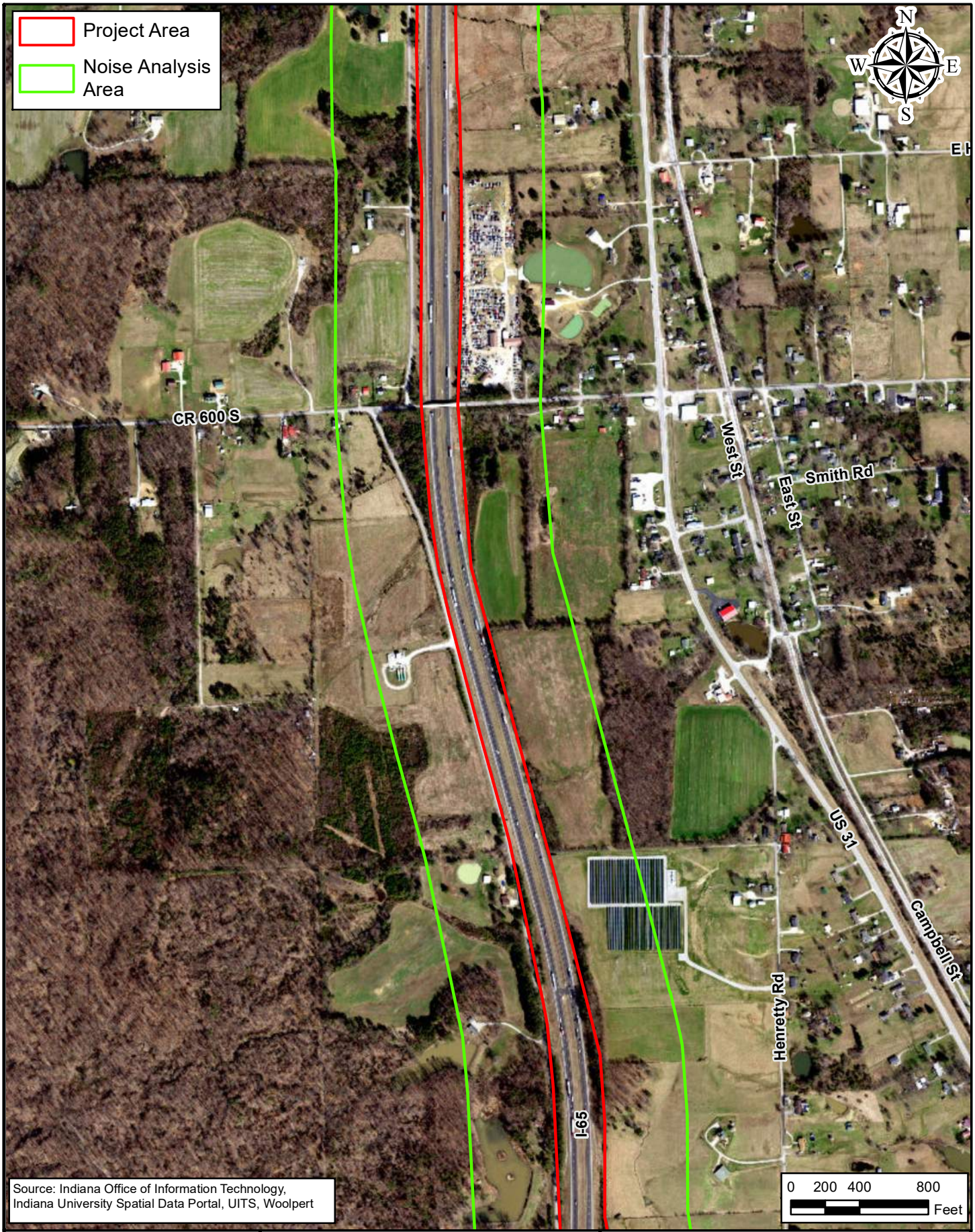

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Figure 3: 2017 Aerial Photography
Map 6 of 10

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Figure 3: 2017 Aerial Photography
Map 7 of 10

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Figure 3: 2017 Aerial Photography
Map 8 of 10

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Figure 3: 2017 Aerial Photography
Map 9 of 10

INDOT Seymour District
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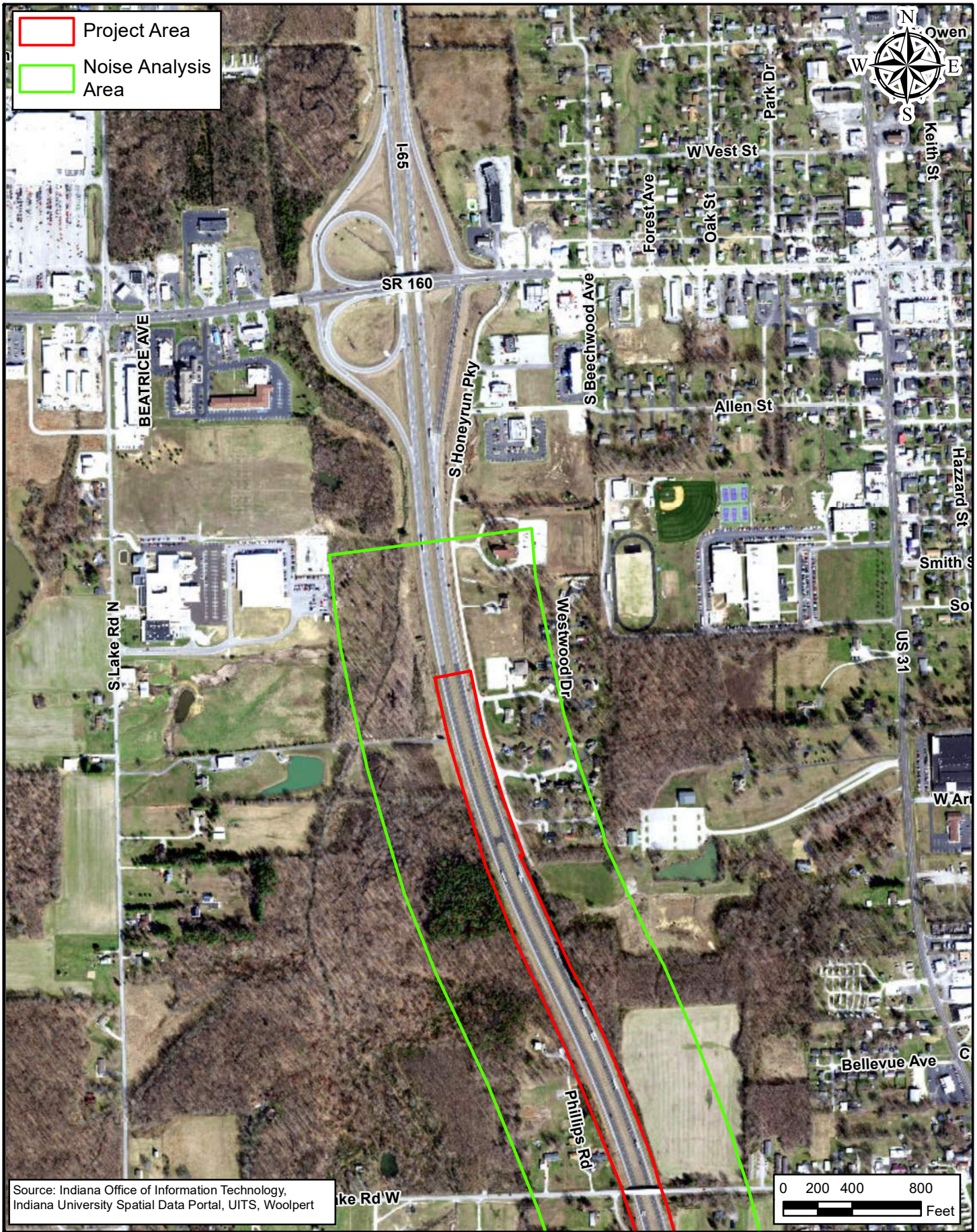

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Figure 3: 2017 Aerial Photography
Map 10 of 10

INDOT Seymour District
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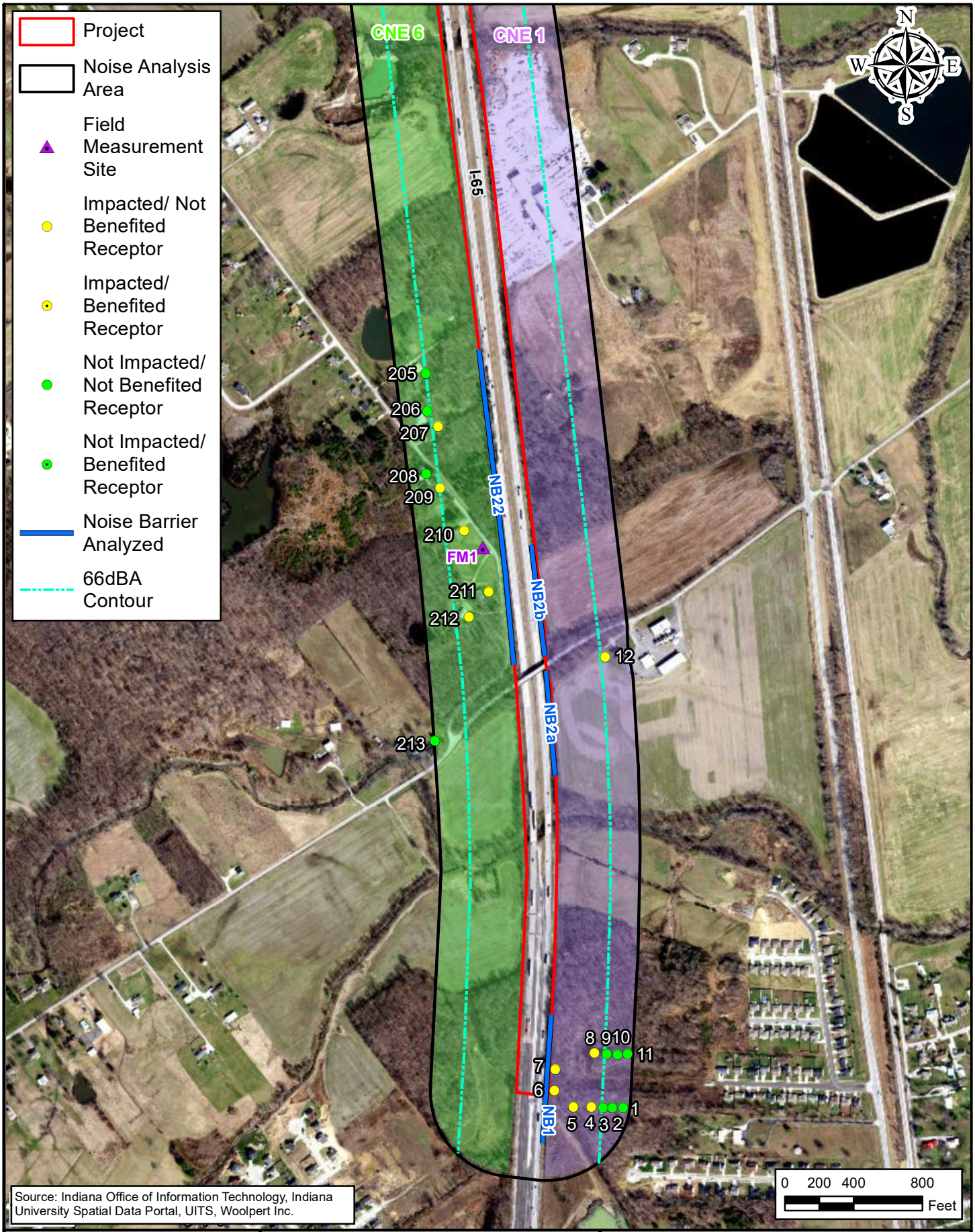

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Figure 4: Noise Map 1 of 10

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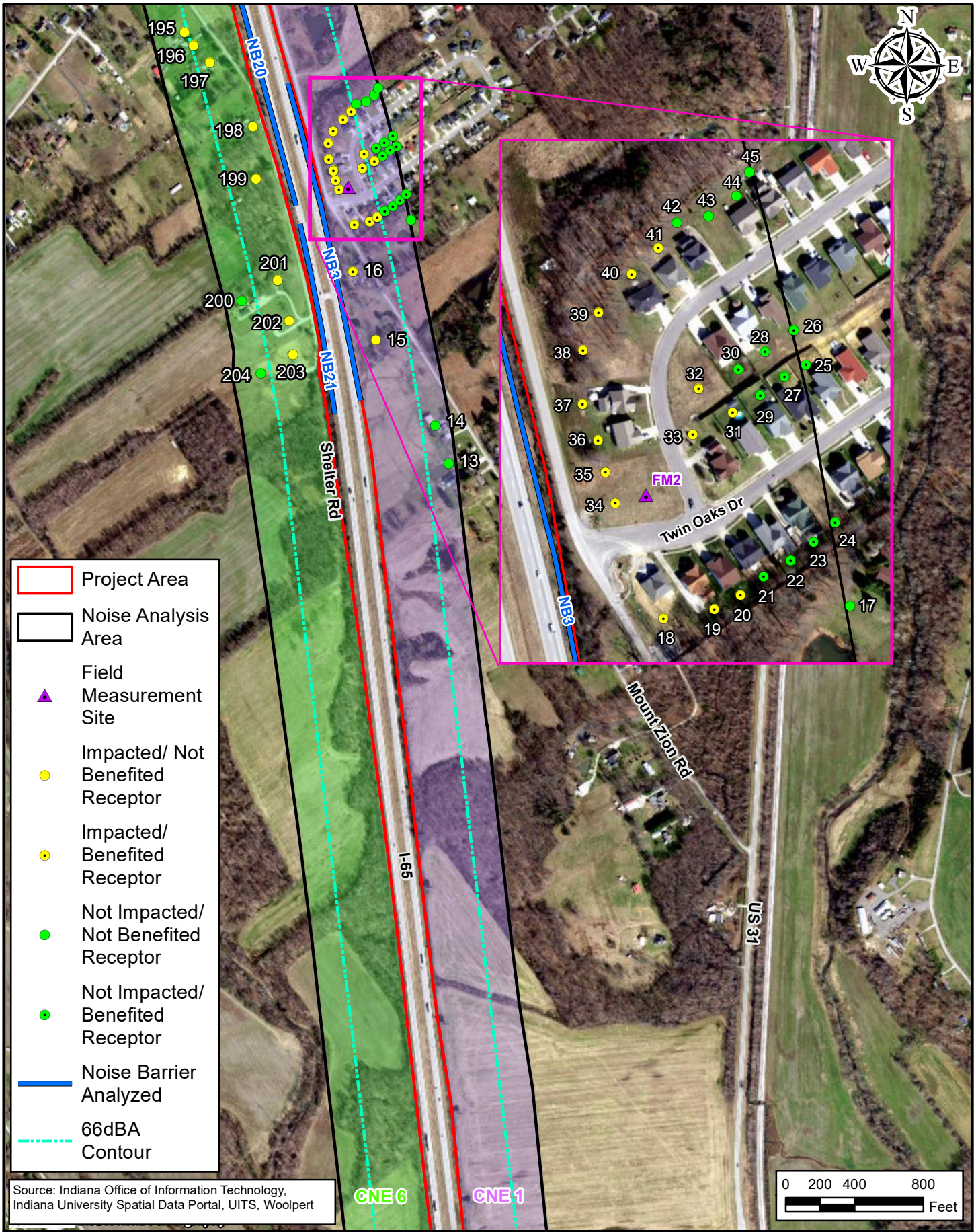

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Figure 4: Noise Map 2 of 10

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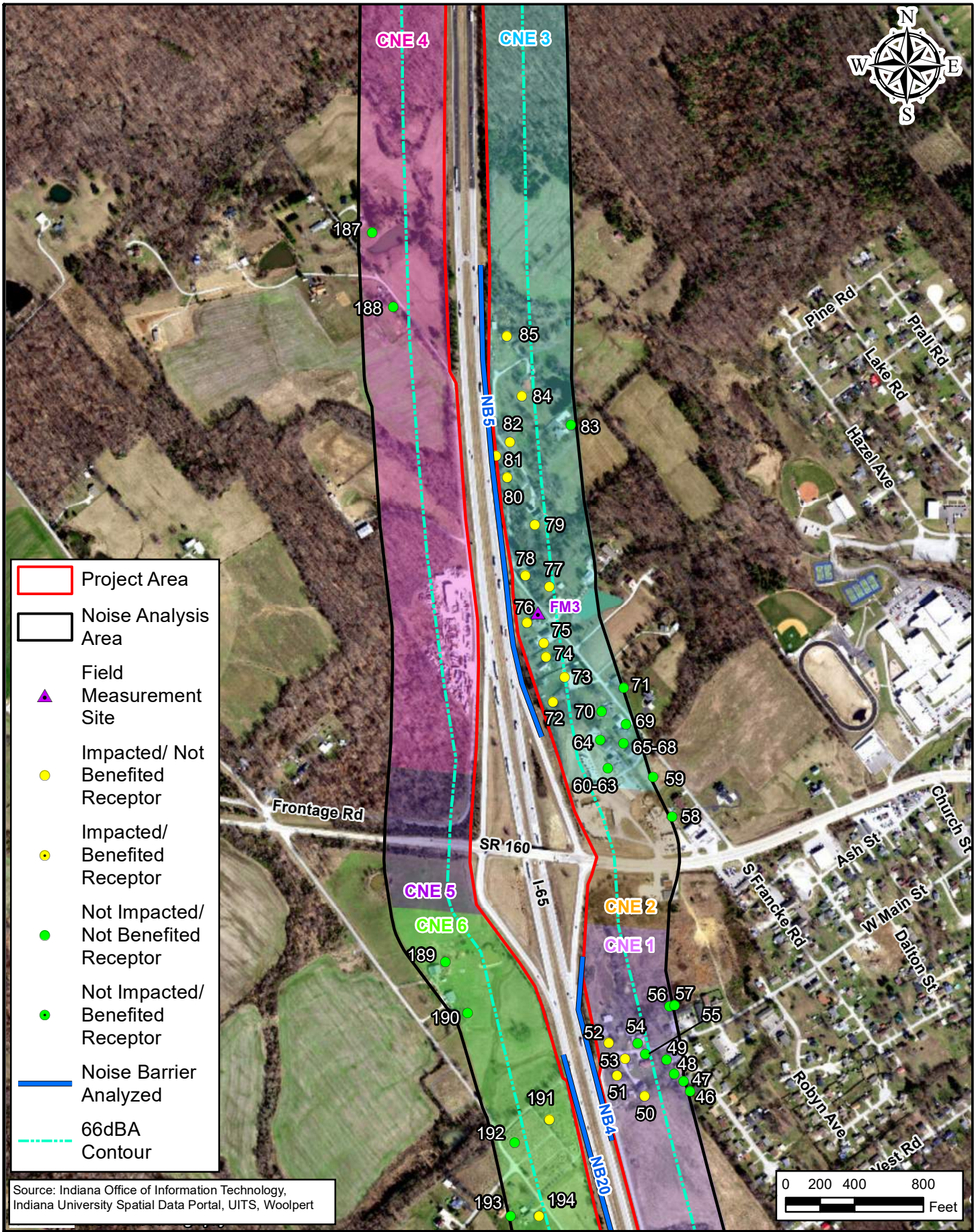
I-65 Added Travel Lanes from 0.5 mile north of Blue Lick Road to 0.5 mile south of SR 56
Des. No. 1700135
Location: Scottsburg and Henryville
Townships: Union, Monroe, and Vienna
Counties: Clark and Scott County
Date:01/12/2021 State: Indiana



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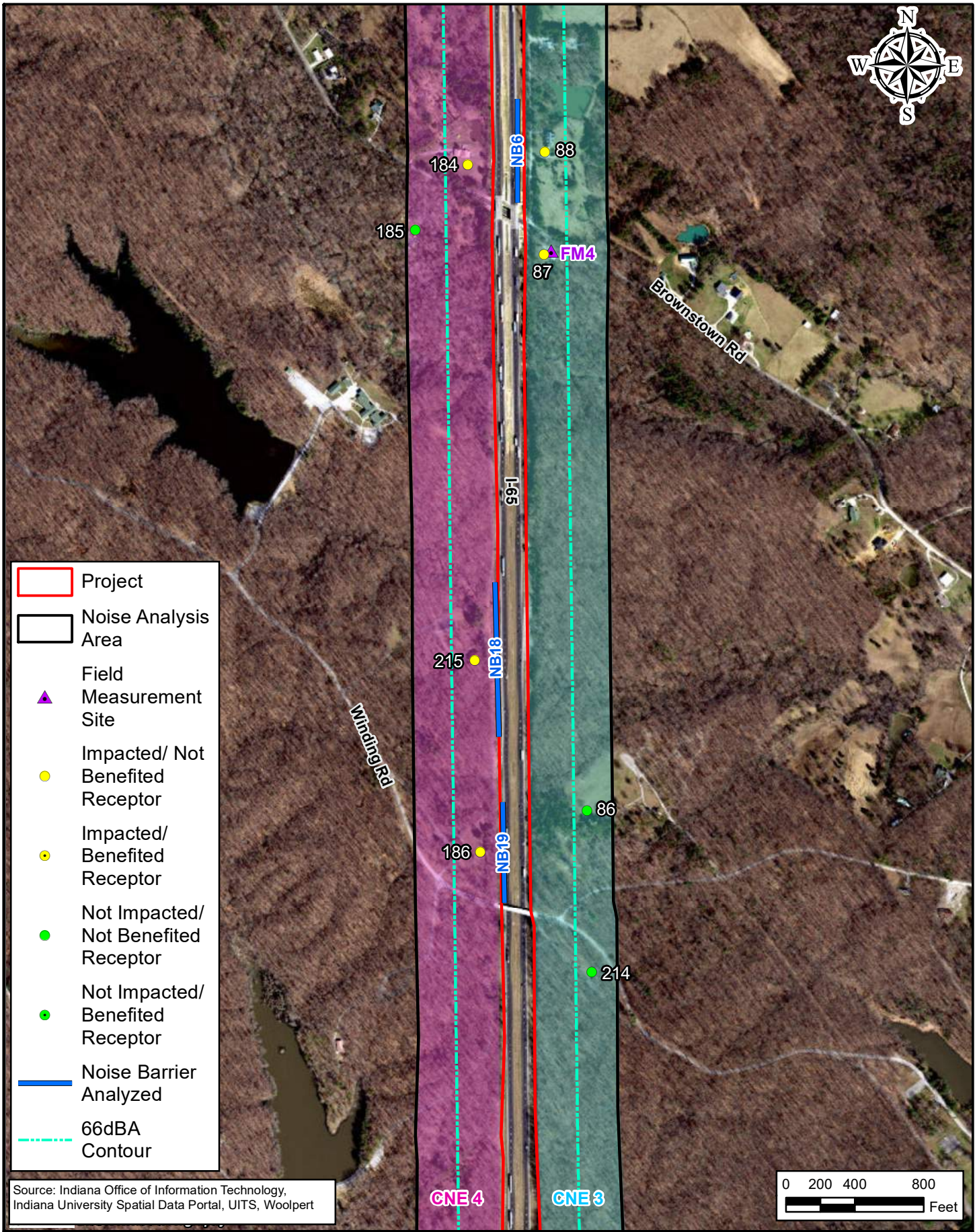
AMERICAN STRUCTUREPOINT INC.

Figure 4: Noise Map 3 of 10

INDOT Seymour District
185 Agrico Lane
Seymour, IN 47274

I-65 Added Travel Lanes from 0.5 mile north of Blue Lick Road to 0.5 mile south of SR 56
Des. No. 1700135
Location: Scottsburg and Henryville
Townships: Union, Monroe, and Vienna
Counties: Clark and Scott County
Date:01/12/2021 State: Indiana



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AMERICAN STRUCTUREPOINT INC.

Figure 4: Noise Map 4 of 10

INDOT Seymour District
185 Agrico Lane
Seymour, IN 47274

I-65 Added Travel Lanes from 0.5 mile north of Blue Lick Road to 0.5 mile south of SR 56
Des. No. 1700135
Location: Scottsburg and Henryville
Townships: Union, Monroe, and Vienna
Counties: Clark and Scott County
Date:01/12/2021 State: Indiana

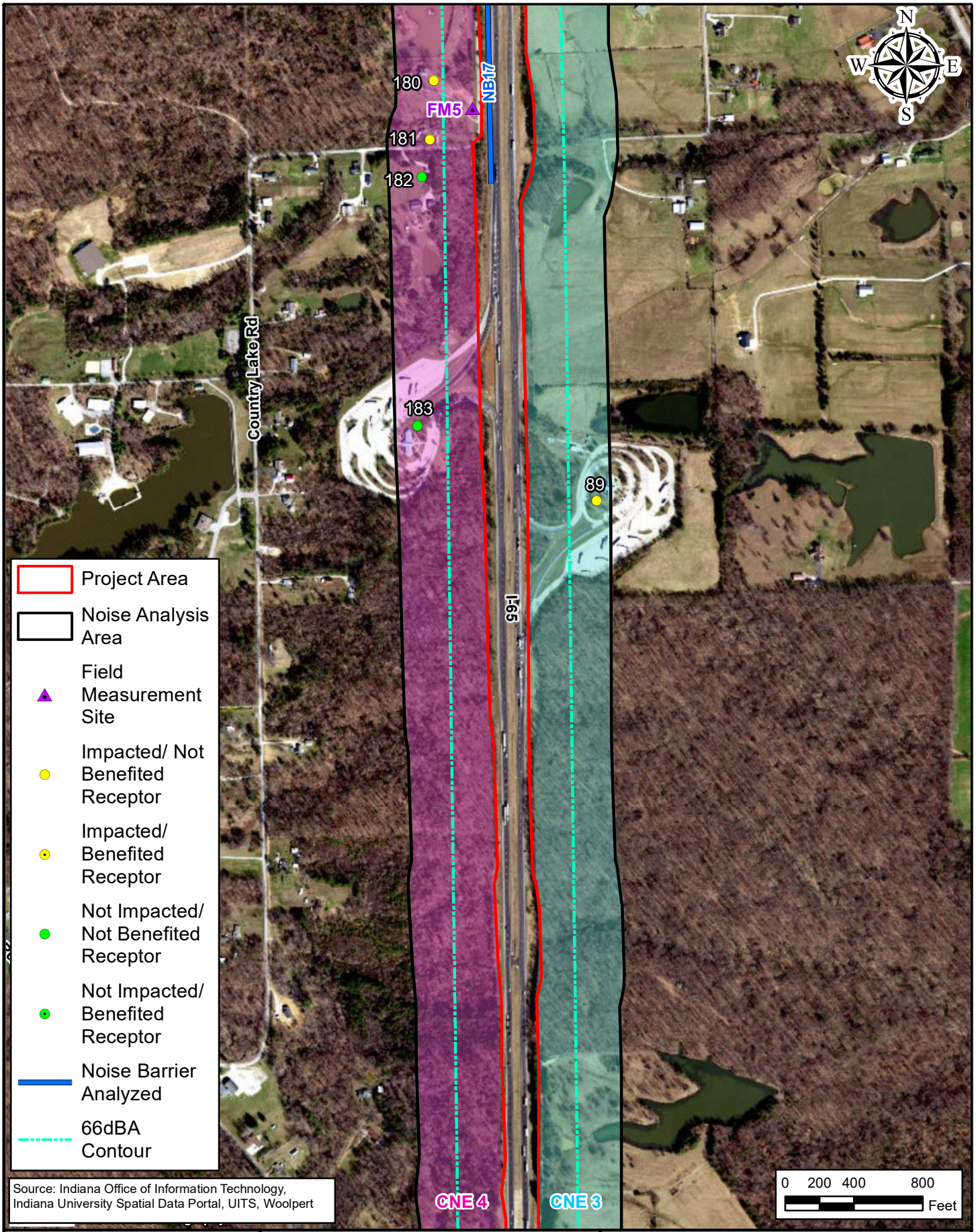

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Figure 4: Noise Map 5 of 10

INDOT Seymour District
185 Agrico Lane
Seymour, IN 47274

I-65 Added Travel Lanes from 0.5 mile north of Blue Lick Road to 0.5 mile south of SR 56
Des. No. 1700135
Location: Scottsburg and Henryville
Townships: Union, Monroe, and Vienna
Counties: Clark and Scott County
Date:01/12/2021 State: Indiana

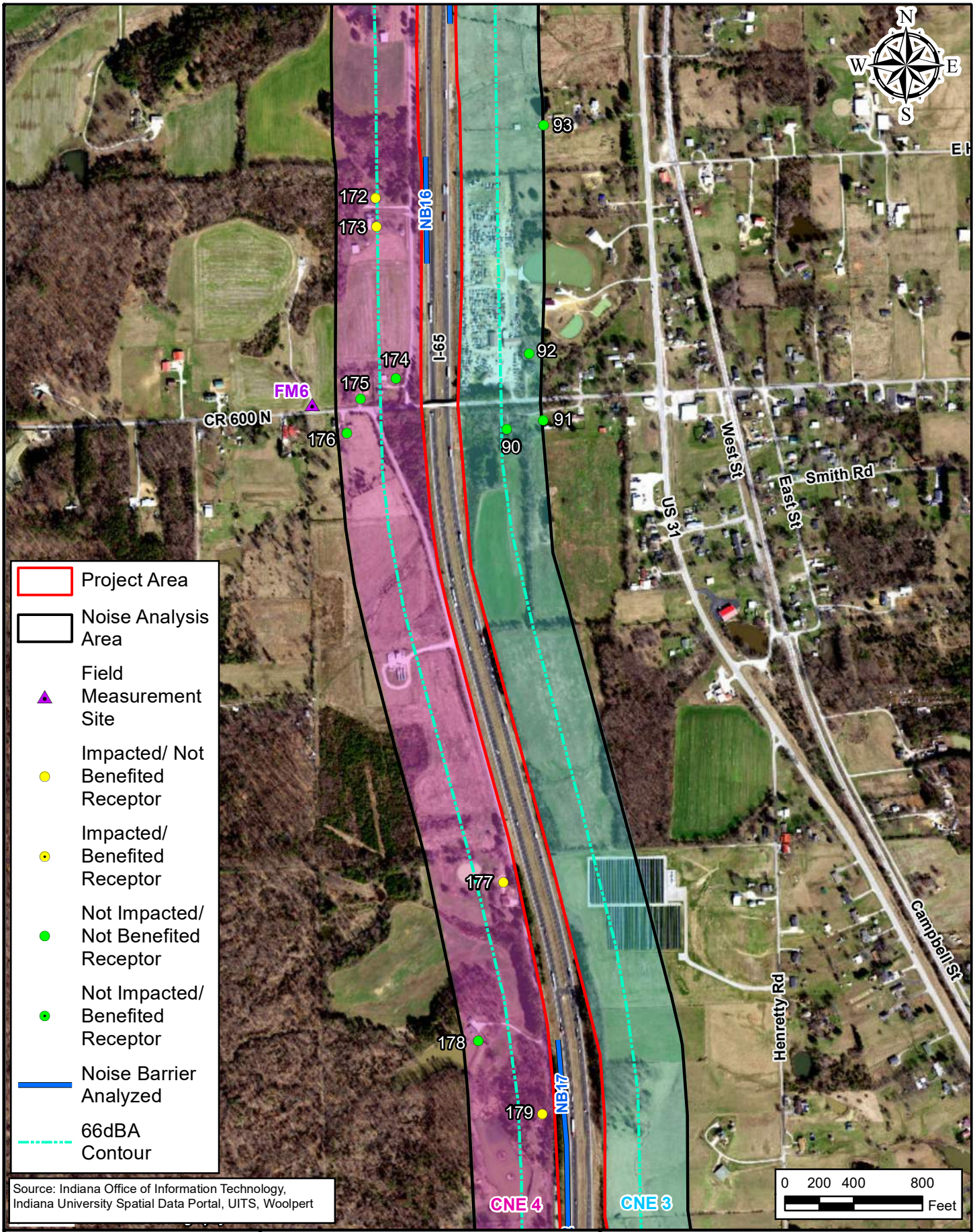

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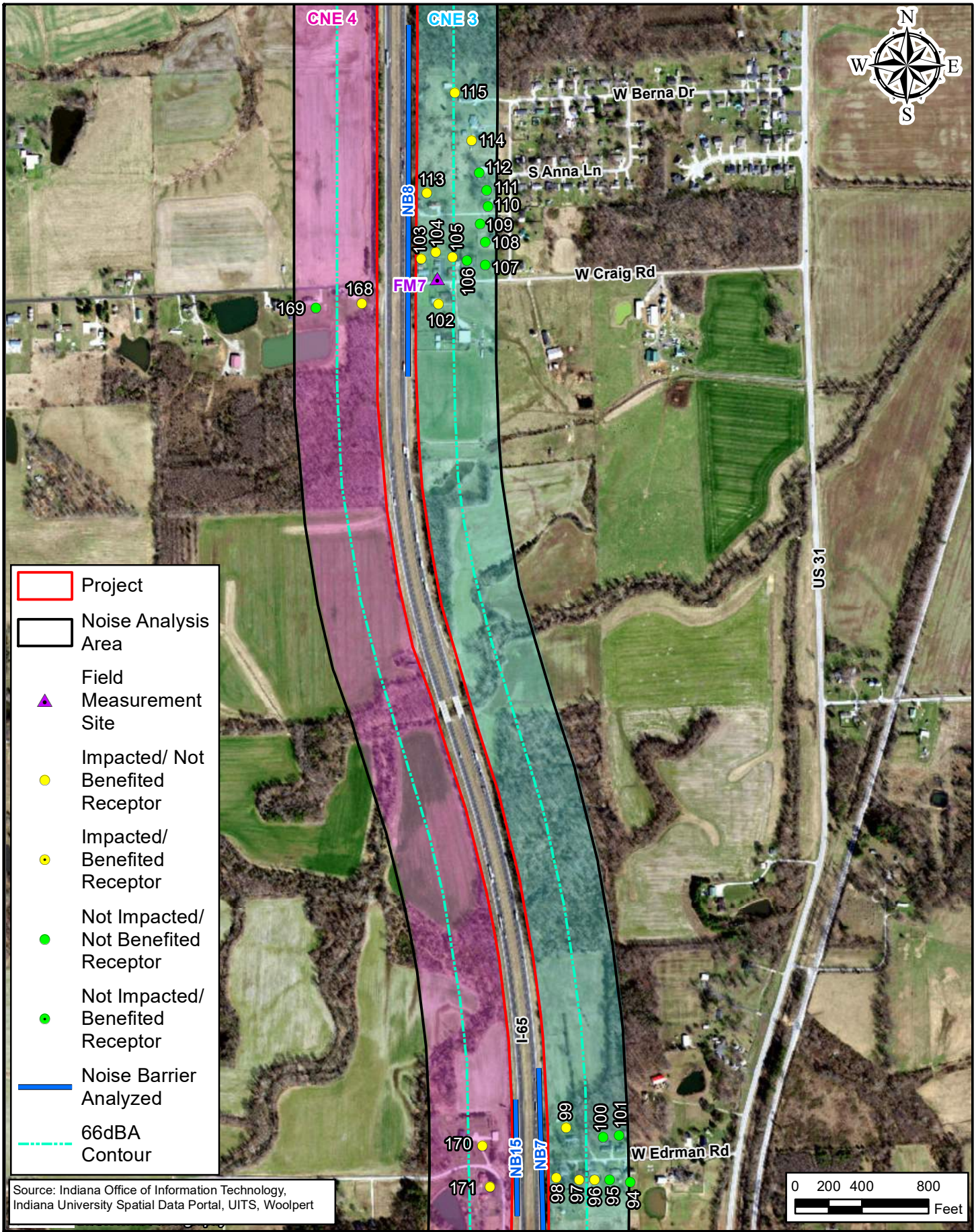
Figure 4: Noise Map 6 of 10

INDOT Seymour District
185 Agrico Lane
Seymour, IN 47274

I-65 Added Travel Lanes from 0.5 mile north of Blue Lick Road to 0.5 mile south of SR 56
Des. No. 1700135
Location: Scottsburg and Henryville
Townships: Union, Monroe, and Vienna
Counties: Clark and Scott County
Date:01/12/2021 State: Indiana



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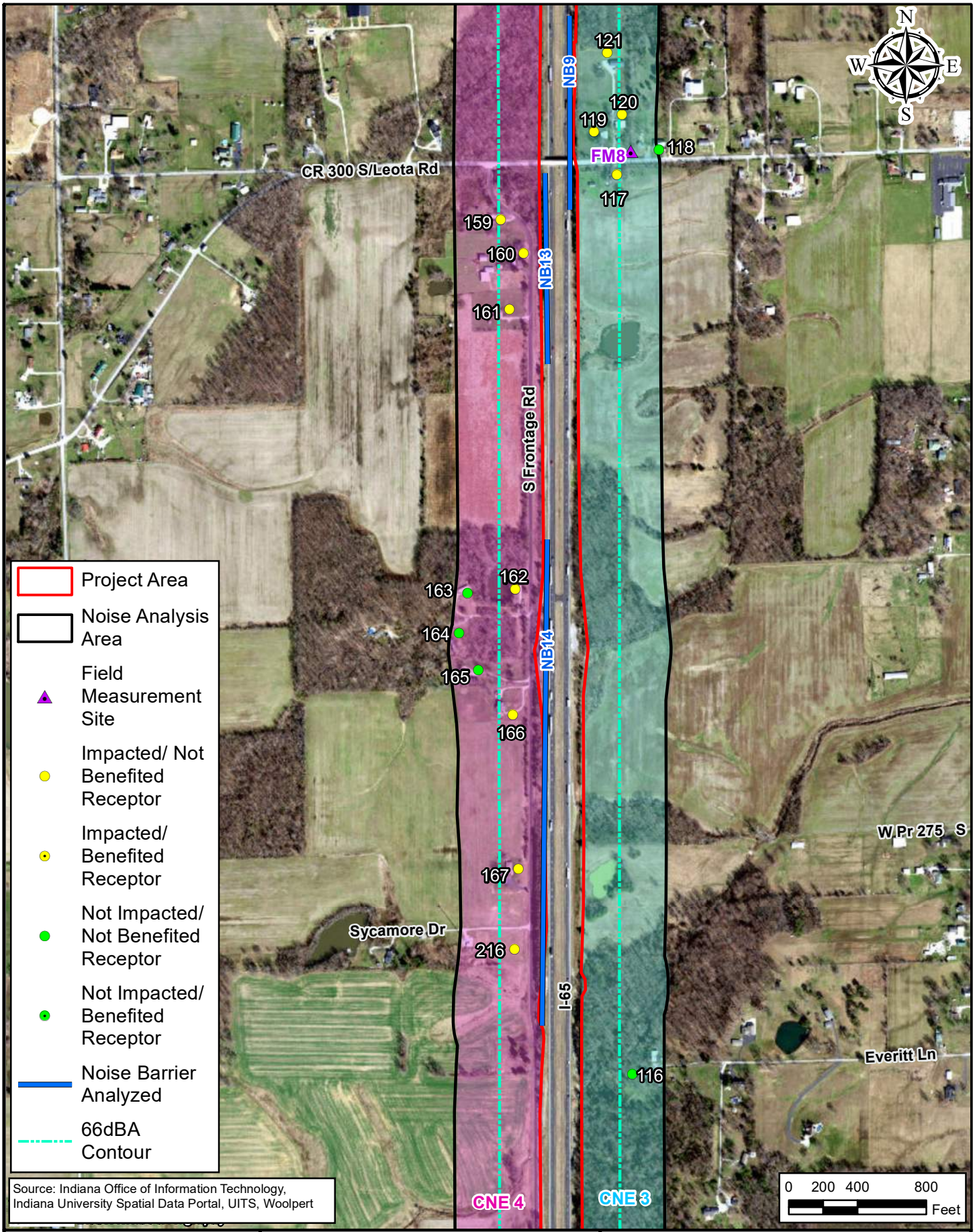
AMERICAN STRUCTUREPOINT INC.

Figure 4: Noise Map 7 of 10

INDOT Seymour District
185 Agrico Lane
Seymour, IN 47274

I-65 Added Travel Lanes from 0.5 mile north of Blue Lick Road to 0.5 mile south of SR 56
Des. No. 1700135
Location: Scottsburg and Henryville
Townships: Union, Monroe, and Vienna
Counties: Clark and Scott County
Date:01/12/2021 State: Indiana



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AMERICAN STRUCTUREPOINT INC.

Figure 4: Noise Map 8 of 10

INDOT Seymour District
185 Agrico Lane
Seymour, IN 47274

I-65 Added Travel Lanes from 0.5 mile north of Blue Lick Road to 0.5 mile south of SR 56
Des. No. 1700135
Location: Scottsburg and Henryville
Townships: Union, Monroe, and Vienna
Counties: Clark and Scott County
Date:01/12/2021 State: Indiana

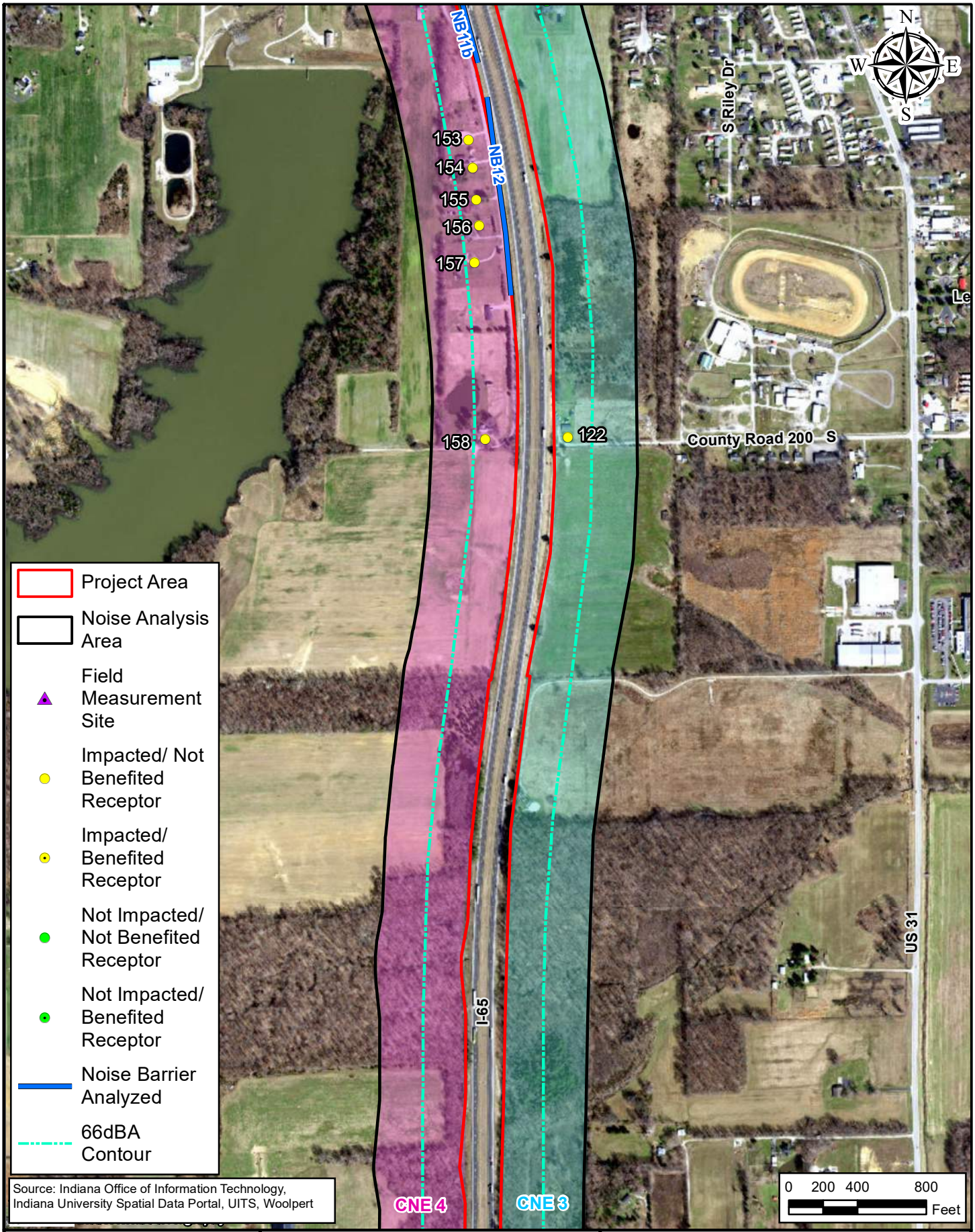

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Figure 4: Noise Map 9 of 10

INDOT Seymour District
185 Agrico Lane
Seymour, IN 47274

I-65 Added Travel Lanes from 0.5 mile north of Blue Lick Road to 0.5 mile south of SR 56
Des. No. 1700135
Location: Scottsburg and Henryville
Townships: Union, Monroe, and Vienna
Counties: Clark and Scott County
Date:01/12/2021 State: Indiana

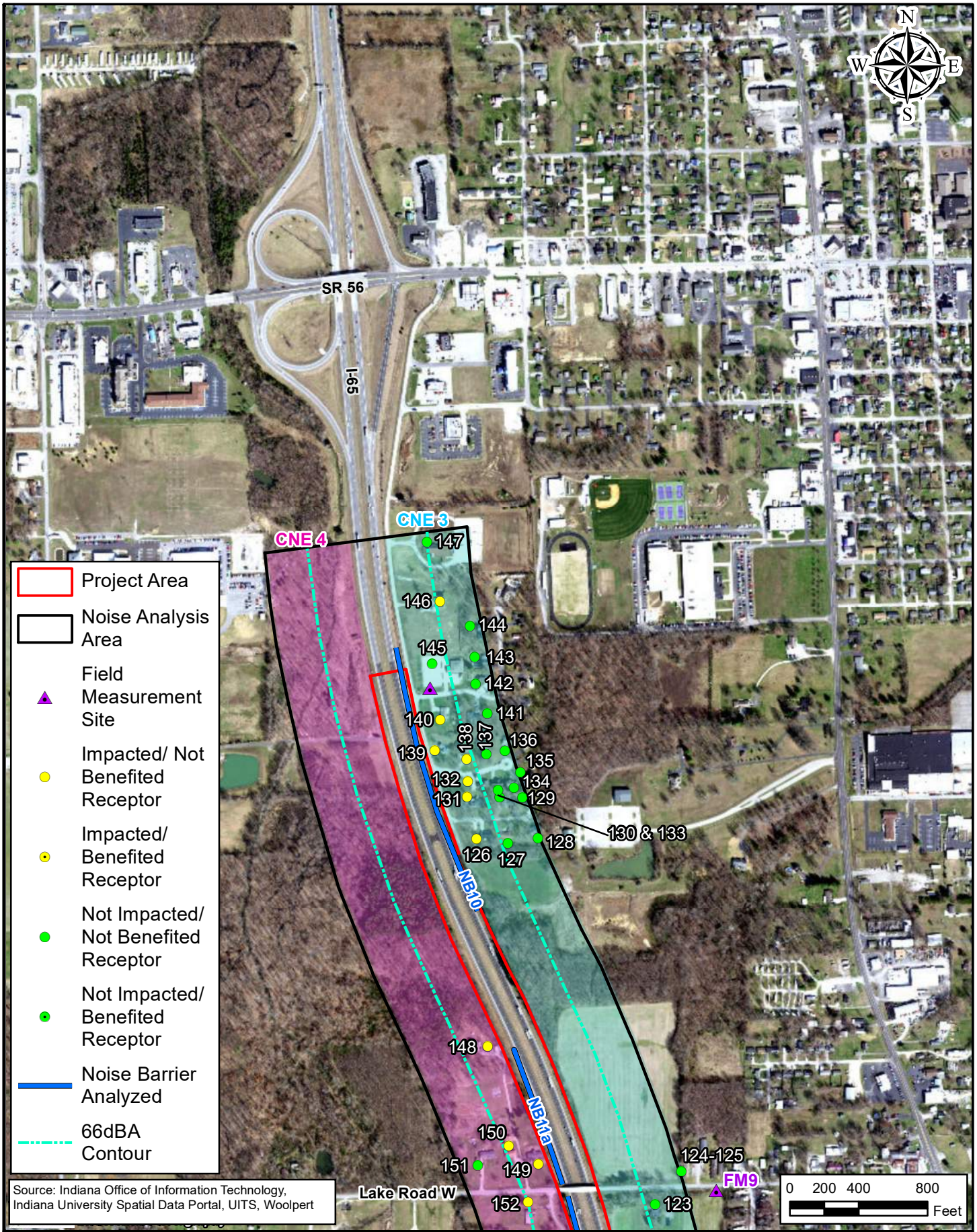

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Figure 4: Noise Map 10 of 10

INDOT Seymour District
185 Agrico Lane
Seymour, IN 47274

I-65 Added Travel Lanes from 0.5 mile north of Blue Lick Road to 0.5 mile south of SR 56
Des. No. 1700135
Location: Scottsburg and Henryville
Townships: Union, Monroe, and Vienna
Counties: Clark and Scott County
Date:01/12/2021 State: Indiana

Appendix B – Field Measurement Data Sheets

NOISE FIELD MEASUREMENT DATA SHEET

						AM / PM	Site: FM 1
Job No.:	2019.00172	Des. No.: 1700135	Location (City / County):	Henryville/Clark County		Date:	6/3/2020
Project:	I-65 Added Travel Lanes					Atmospheric Cond.	
Instrument:	Larson Davis (LD) Class 1 Integrating Sound Level Meter (SLM) / Analyzer 831					Temp:	68 degrees
Calibrator:	Model CAL200 Calibrator		Calibrated:	☑ 94 dBA ☑ 114 dBA		Weather:	sunny
Completed By:	Monica Del Real, Kaitlynn Walker, and Nakayla Krahn					Relative Humidity:	74%
Receptors Represented:	Field Measurement Site 1 (FM 1)					Avg. Windspd.:	5 mph
Major Noise Source:	I-65					Pavement:	Dry
Secondary Source:	Howser Road					Other Observations:	
Land Use Cat. (*Select All Applicable*)	A - 57 dBA Serene Areas	B - 67 dBA Residential	C - 67 dBA Hosp/Parks/Schls/Church/ Cem/Trail/Historic/Day Care	E - 72 dBA Hotels/Offices /Rest.	F - N/A Ag/Manuf/Mai nt./Retail	G - NA Undev. Land Not Permit.	

Road Config.:	# of Lanes	Lane Width (ft.)	Median Width (ft.)	Posted Speed	Observed Speed
Primary Road:	4	12	60	70	70
Secondary Road:	2	10	N/A	N/A	30

Test Time	Start: 7:15		Finish: 7:30	
Measured dBA	68.7 L_{Aeq}		91.4 L_{max}	
Unexpected Events				
Traffic Volumes	Primary Road (I-65)		Secondary Road	
	NB	SB	NB	SB
Cars	113	252	3	1
Med. Trucks	8	9		
Heavy Trucks	54	76		
Buses				
Motorcycles				

NOISE FIELD MEASUREMENT DATA SHEET

								AM / PM	Site: FM 2
Job No.:	2019.00172	Des. No.:	1700135	Location (City / County):	Henryville/Clark County			Date:	6/3/2020
Project:	I-65 Added Travel Lanes							Atmospheric Cond.	
Instrument:	Larson Davis (LD) Class 1 Integrating Sound Level Meter (SLM) / Analyzer 831							Temp:	68 degrees
Calibrator:	Model CAL200 Calibrator			Calibrated:	☑ 94 dBA ☑ 114 dBA			Weather:	sunny
Completed By:	Monica Del Real, Kaitlynn Walker, and Nakayla Krahn							Relative Humidity:	74%
Receptors Represented:	Field Measurement Site 2 (FM 2)							Avg. Windspd.:	5 mph
Major Noise Source:	I-65							Pavement:	Dry
Secondary Source:	Mt. Zion Road							Other Observations:	
Tertiary Source:	Twin Oaks Drive								
Land Use Cat. (*Select All Applicable*)	A - 57 dBA Serene Areas	B - 67 dBA Residential	C - 67 dBA Hosp/Parks/Schls/Church/ Cem/Trail/Historic/Day Care	E - 72 dBA Hotels/Offices /Rest.	F - N/A Ag/Manuf/Maint./Retail	G - NA Undev. Land Not Permit.			

Road Config.:	# of Lanes	Lane Width (ft.)	Median Width (ft.)	Posted Speed	Observed Speed
Primary Road:	4	12	60	70	70
Secondary Road:	2	10	N/A	30	30
Tertiary Road:	2	15	N/A	N/A	20

Test Time	Start: 7:50		Finish: 8:05			
Measured dBA	68.2 L_{Aeq}		92 L_{max}			
Unexpected Events						
Traffic Volumes	Primary Road (I-65)		Secondary Road		Tertiary Road	
	NB	SB	NB	SB	EB	WB
Cars	124	108	2	5	3	6
Med. Trucks	20	19	1			
Heavy Trucks	111	75				
Buses						
Motorcycles						

NOISE FIELD MEASUREMENT DATA SHEET

							AM / PM	Site: FM 3
Job No.:	2019.00172	Des. No.: 1700135	Location (City / County): Henryville/Clark County				Date:	6/3/2020
Project:	I-65 Added Travel Lanes						Atmospheric Cond.	
Instrument:	Larson Davis (LD) Class 1 Integrating Sound Level Meter (SLM) / Analyzer 831						Temp:	71 degrees
Calibrator:	Model CAL200 Calibrator		Calibrated: ☑ 94 dBA ☑ 114 dBA				Weather:	sunny
Completed By:	Monica Del Real, Kaitlynn Walker, and Nakayla Krahn						Relative Humidity:	68%
Receptors Represented:	Field Measurement Site 3 (FM 3)						Avg. Windspd.:	6 mph
Major Noise Source:	I-65						Pavement:	Dry
Secondary Source:	Franke Road						Other Observations:	
Land Use Cat. (*Select All Applicable*)	A - 57 dBA Serene Areas	B - 67 dBA Residential	C - 67 dBA Hosp/Parks/Schls/Church/ Cem/Trail/Historic/Day Care	E - 72 dBA Hotels/Offices /Rest.	F - N/A Ag/Manuf/Maint./Retail	G - NA Undev. Land Not Permit.		

Road Config.:	# of Lanes	Lane Width (ft.)	Median Width (ft.)	Posted Speed	Observed Speed
Primary Road:	4	12	60	70	70
Secondary Road:	2	15	N/A	20	20

Test Time	Start: 8:30		Finish: 8:45	
Measured dBA	64.8 L_{Aeq}		91.4 L_{max}	
Unexpected Events				
Traffic Volumes	Primary Road (I-65)		Secondary Road	
	NB	SB	NB	SB
Cars	118	124		
Med. Trucks	14	20		
Heavy Trucks	85	111		
Buses				
Motorcycles				

NOISE FIELD MEASUREMENT DATA SHEET

								AM / PM	Site: FM 4
Job No.:	2019.00172	Des. No.:	1700135	Location (City / County):	Henryville/Clark County			Date:	6/3/2020
Project:	I-65 Added Travel Lanes							Atmospheric Cond.	
Instrument:	Larson Davis (LD) Class 1 Integrating Sound Level Meter (SLM) / Analyzer 831							Temp:	76 degrees
Calibrator:	Model CAL200 Calibrator			Calibrated:	☑ 94 dBA ☑ 114 dBA			Weather:	sunny
Completed By:	Monica Del Real, Kaitlynn Walker, and Nakayla Krahn							Relative Humidity:	57%
Receptors Represented:	Field Measurement Site 4 (FM 4)							Avg. Windspd.:	3 mph
Major Noise Source:	I-65							Pavement:	Dry
Secondary Source:	Brownstown Road							Other Observations:	
Land Use Cat. (*Select All Applicable*)	A - 57 dBA Serene Areas	B - 67 dBA Residential	C - 67 dBA Hosp/Parks/Schls/Church/ Cem/Trail/Historic/Day Care	E - 72 dBA Hotels/Offices /Rest.	F - N/A Ag/Manuf/Mai nt./Retail	G - NA Undev. Land Not Permit.			

Road Config.:	# of Lanes	Lane Width (ft.)	Median Width (ft.)	Posted Speed	Observed Speed
Primary Road:	4	12	60	70	70
Secondary Road:	2	7	N/A	30	30

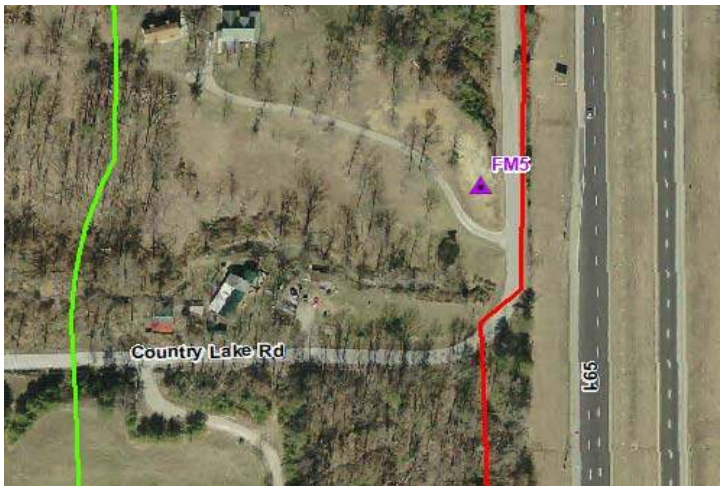
Test Time	Start: 9:20		Finish: 9:35	
Measured dBA	65.7 L_{Aeq}		102.5 L_{max}	
Unexpected Events				
Traffic Volumes	Primary Road (I-65)		Secondary Road	
	NB	SB	EB	WB
Cars	117	130	1	19
Med. Trucks	8	32		2
Heavy Trucks	79	84		
Buses				
Motorcycles				

NOISE FIELD MEASUREMENT DATA SHEET

							AM / PM	Site: FM 5
Job No.:	2019.00172	Des. No.: 1700135	Location (City / County): Henryville/Clark County				Date:	6/3/2020
Project:	I-65 Added Travel Lanes						Atmospheric Cond.	
Instrument:	Larson Davis (LD) Class 1 Integrating Sound Level Meter (SLM) / Analyzer 831						Temp:	80 degrees
Calibrator:	Model CAL200 Calibrator		Calibrated: ☑ 94 dBA ☑ 114 dBA				Weather:	sunny
Completed By:	Monica Del Real, Kaitlynn Walker, and Nakayla Krahn						Relative Humidity:	51%
Receptors Represented:	Field Measurement Site 5 (FM 5)						Avg. Windspd.:	4 mph
Major Noise Source:	I-65						Pavement:	Dry
Secondary Source:	Country Lake Road						Other Observations:	
Land Use Cat. (*Select All Applicable*)	A - 57 dBA Serene Areas	B - 67 dBA Residential	C - 67 dBA Hosp/Parks/Schls/Church/ Cem/Trail/Historic/Day Care	E - 72 dBA Hotels/Offices /Rest.	F - N/A Ag/Manuf/Mai nt./Retail	G - NA Undev. Land Not Permit.		

Road Config.:	# of Lanes	Lane Width (ft.)	Median Width (ft.)	Posted Speed	Observed Speed
Primary Road:	4	12	60	70	70
Secondary Road:	2	7	N/A	N/A	N/A

Test Time	Start: 9:57		Finish: 10:12	
Measured dBA	67.4 L_{Aeq}		93.9 L_{max}	
Unexpected Events				
Traffic Volumes	Primary Road (I-65)		Secondary Road	
	NB	SB	EB	WB
Cars	147	163		
Med. Trucks	11	19		
Heavy Trucks	65	91		
Buses				
Motorcycles				



NOISE FIELD MEASUREMENT DATA SHEET

						AM / **PM**	Site: FM 6
Job No.:	2019.00172	Des. No.: 1700135	Location (City / County):	Underwood/Clark County		Date:	9/3/2020
Project:	I-65 Added Travel Lanes					Atmospheric Cond.	
Instrument:	Larson Davis (LD) Class 1 Integrating Sound Level Meter (SLM) / Analyzer 831					Temp:	81 degrees
Calibrator:	Model CAL200 Calibrator		Calibrated: ☑ 94 dBA ☑ 114 dBA			Weather:	cloudy
Completed By:	Monica Del Real, Leah Perry, and Nakayla Krahn					Relative Humidity:	80%
Receptors Represented:	Field Measurement Site 6 (FM 6)					Avg. Windspd.:	6 mph
Major Noise Source:	I-65					Pavement:	Dry
Secondary Source:	CR 600 S					Other Observations:	
Land Use Cat. (*Select All Applicable*)	A - 57 dBA Serene Areas	B - 67 dBA Residential	C - 67 dBA Hosp/Parks/Schls/Church/ Cem/Trail/Historic/Day Care	E - 72 dBA Hotels/Offices /Rest.	F - N/A Ag/Manuf/Maint./Retail	G - NA Undev. Land Not Permit.	

Road Config.:	# of Lanes	Lane Width (ft.)	Median Width (ft.)	Posted Speed	Observed Speed
Primary Road:	4	12	60	70	70
Secondary Road:	2	10	N/A	35	35

Test Time	Start: 14:56		Finish: 15:11	
Measured dBA	58.1 L_{Aeq}		91 L_{max}	
Unexpected Events	Birds Chirping			
Traffic Volumes	Primary Road (I-65)		Secondary Road	
	NB	SB	EB	WB
Cars	256	324	6	2
Med. Trucks	24	24		1
Heavy Trucks	115	125		
Buses	1			
Motorcycles		1	1	

NOISE FIELD MEASUREMENT DATA SHEET

						AM / PM	Site: FM 7
Job No.:	2019.00172	Des. No.: 1700135	Location (City / County): Scottsburg/Scott County			Date:	6/3/2020
Project:	I-65 Added Travel Lanes					Atmospheric Cond.	
Instrument:	Larson Davis (LD) Class 1 Integrating Sound Level Meter (SLM) / Analyzer 831					Temp:	83 degrees
Calibrator:	Model CAL200 Calibrator		Calibrated: ☑ 94 dBA ☑ 114 dBA			Weather:	sunny
Completed By:	Monica Del Real, Kaitlynn Walker, and Nakayla Krahn					Relative Humidity:	47%
Receptors Represented:	Field Measurement Site 7 (FM 7)					Avg. Windspd.:	4 mph
Major Noise Source:	I-65					Pavement:	Dry
Secondary Source:	Craig Rd					Other Observations:	
Land Use Cat. (*Select All Applicable*)	A - 57 dBA Serene Areas	B - 67 dBA Residential	C - 67 dBA Hosp/Parks/Schls/Church/ Cem/Trail/Historic/Day Care	E - 72 dBA Hotels/Offices /Rest.	F - N/A Ag/Manuf/Maint./Retail	G - NA Undev. Land Not Permit.	

Road Config.:	# of Lanes	Lane Width (ft.)	Median Width (ft.)	Posted Speed	Observed Speed
Primary Road:	4	12	60	70	70
Secondary Road:	N/A	N/A	N/A	N/A	N/A

Test Time	Start: 11:32		Finish: 11:47	
Measured dBA	63.7 L_{Aeq}		89.4 L_{max}	
Unexpected Events				
Traffic Volumes	Primary Road (I-65)		Secondary Road	
	NB	SB	EB	WB
Cars	121	125		
Med. Trucks	12	19		
Heavy Trucks	61	91		
Buses				
Motorcycles	1	2		

NOISE FIELD MEASUREMENT DATA SHEET

						AM / **PM**	Site: FM 8
Job No.:	2019.00172	Des. No.: 1700135	Location (City / County): Scottsburg/Scott County			Date:	6/3/2020
Project:	I-65 Added Travel Lanes					Atmospheric Cond.	
Instrument:	Larson Davis (LD) Class 1 Integrating Sound Level Meter (SLM) / Analyzer 831					Temp:	83 degrees
Calibrator:	Model CAL200 Calibrator		Calibrated: ☑ 94 dBA ☑ 114 dBA			Weather:	sunny
Completed By:	Monica Del Real, Kaitlynn Walker, and Nakayla Krahn					Relative Humidity:	47%
Receptors Represented:	Field Measurement Site 8 (FM 8)					Avg. Windspd.:	4 mph
Major Noise Source:	I-65					Pavement:	Dry
Secondary Source:	Leota Road					Other Observations:	
Land Use Cat. (*Select All Applicable*)	A - 57 dBA Serene Areas	B - 67 dBA Residential	C - 67 dBA Hosp/Parks/Schls/Church/ Cem/Trail/Historic/Day Care	E - 72 dBA Hotels/Offices /Rest.	F - N/A Ag/Manuf/Mai nt./Retail	G - NA Undev. Land Not Permit.	

Road Config.:	# of Lanes	Lane Width (ft.)	Median Width (ft.)	Posted Speed	Observed Speed
Primary Road:	4	12	60	70	70
Secondary Road:	2	12	N/A	35	40

Test Time	Start: 12:00		Finish: 12:15	
Measured dBA	60.6 L_{Aeq}		92.6 L_{max}	
Unexpected Events				
Traffic Volumes	Primary Road (I-65)		Secondary Road	
	NB	SB	EB	WB
Cars	153	150	5	13
Med. Trucks	8	17	1	
Heavy Trucks	108	83		
Buses				
Motorcycles		1		

NOISE FIELD MEASUREMENT DATA SHEET

						AM / PM	Site: FM 9
Job No.:	2019.00172	Des. No.: 1700135	Location (City / County): Scottsburg/Scott County			Date:	6/3/2020
Project:	I-65 Added Travel Lanes					Atmospheric Cond.	
Instrument:	Larson Davis (LD) Class 1 Integrating Sound Level Meter (SLM) / Analyzer 831					Temp:	85 degrees
Calibrator:	Model CAL200 Calibrator		Calibrated: ☑ 94 dBA ☑ 114 dBA			Weather:	sunny
Completed By:	Monica Del Real, Kaitlynn Walker, and Nakayla Krahn					Relative Humidity:	45%
Receptors Represented:	Field Measurement Site 9 (FM 9)					Avg. Windspd.:	4 mph
Major Noise Source:	I-65					Pavement:	Dry
Secondary Source:	Lake Road West					Other Observations:	
Land Use Cat. (*Select All Applicable*)	A - 57 dBA Serene Areas	B - 67 dBA Residential	C - 67 dBA Hosp/Parks/Schls/Church/ Cem/Trail/Historic/Day Care	E - 72 dBA Hotels/Offices /Rest.	F - N/A Ag/Manuf/Maint./Retail	G - NA Undev. Land Not Permit.	

Road Config.:	# of Lanes	Lane Width (ft.)	Median Width (ft.)	Posted Speed	Observed Speed
Primary Road:	4	12	60	70	70
Secondary Road:	2	12	N/A	30	30

Test Time	Start: 1:35		Finish: 1:50	
Measured dBA	61.1 L_{Aeq}		89.6 L_{max}	
Unexpected Events				
Traffic Volumes	Primary Road (I-65)		Secondary Road	
	NB	SB	EB	WB
Cars	195	155	16	23
Med. Trucks	29	21	1	
Heavy Trucks	122	87		
Buses				
Motorcycles				

NOISE FIELD MEASUREMENT DATA SHEET

							AM / **PM**	Site: FM 10
Job No.:	2019.00172	Des. No.: 1700135	Location (City / County): Scottsburg/Scott County				Date:	6/3/2020
Project:	I-65 Added Travel Lanes						Atmospheric Cond.	
Instrument:	Larson Davis (LD) Class 1 Integrating Sound Level Meter (SLM) / Analyzer 831						Temp:	86 degrees
Calibrator:	Model CAL200 Calibrator		Calibrated: ☑ 94 dBA ☑ 114 dBA				Weather:	sunny
Completed By:	Monica Del Real, Kaitlynn Walker, and Nakayla Krahn						Relative Humidity:	45%
Receptors Represented:	Field Measurement Site 10 (FM 10)						Avg. Windspd.:	4 mph
Major Noise Source:	I-65						Pavement:	Dry
Secondary Source:	Honeyrun Parkway						Other Observations:	
Land Use Cat. (*Select All Applicable*)	A - 57 dBA Serene Areas	B - 67 dBA Residential	C - 67 dBA Hosp/Parks/Schls/Church/ Cem/Trail/Historic/Day Care	E - 72 dBA Hotels/Offices /Rest.	F - N/A Ag/Manuf/Maint./Retail	G - NA Undev. Land Not Permit.		

Road Config.:	# of Lanes	Lane Width (ft.)	Median Width (ft.)	Posted Speed	Observed Speed
Primary Road:	4	12	60	70	70
Secondary Road:	2	10	N/A	N/A	25

Test Time	Start: 2:03		Finish: 2:18	
Measured dBA	72.1 L_{Aeq}		91.9 L_{max}	
Unexpected Events				
Traffic Volumes	Primary Road (I-65)		Secondary Road	
	NB	SB	NB	SB
Cars	205	153	1	1
Med. Trucks	24	21		
Heavy Trucks	106	92		
Buses				
Motorcycles	2	1		

Appendix C – Sound Level Meter Calibration Certificates

Certificate of Calibration and Conformance

This document certifies that the instrument referenced below meets published specifications per Procedure PRD-P263; ANSI S1.4-1983 (R 2006) Type 1; S1.4A-1985; S1.43-1997 Type 1; S1.11-2004 Octave Band Class 0; S1.25-1991; IEC 61672-2002 Class 1; 60651-2001 Type 1; 60804-2000 Type 1; 61260-2001 Class 0; 61252-2002.

Manufacturer:	Larson Davis	Temperature:	72.4	°F
Model Number:	831		22.44	°C
Serial Number:	3174	Rel. Humidity:	38.8	%
Customer:	TMS Rental	Pressure:	992.4	mbars
Description:	Sound Level Meter		992.4	hPa
Note:	As Found/As Left: In Tolerance			

Upon receipt for testing, this instrument was found to be:

Within the stated tolerance of the manufacturer's specification.

Calibration Date: 11-Mar-20 Calibration Due:

Calibration Standards Used:

Manufacturer	Model	Serial Number	Cal Due
Stanford Research Systems	DS360	123270	5/6/2020

This Certificate attests that this instrument has been calibrated under the stated conditions with Measurement and Test Equipment (M&TE) Standards traceable to the National Institute of Standards and Technology (NIST). All of the Measurement Standards have been calibrated to their manufacturers' specified accuracy / uncertainty. Evidence of traceability and accuracy is on file at The Modal Shop and/or Larson Davis Corporate Headquarters. An acceptable accuracy ratio between the Standard(s) and the item calibrated has been maintained. This instrument meets or exceeds the manufacturer's published specification unless noted.

The results documented in this certificate relate only to the item(s) calibrated or tested. Calibration interval assignment and adjustment are the responsibility of the end user. This certificate may not be reproduced, except in full, without the written approval of The Modal Shop.

Technician: Bradly Haarmeyer Signature:

THE MODAL SHOP
A PCB GROUP CO.

3149 East Kemper Road
Cincinnati, OH. 45241
Phone: (513) 351-9919
(800) 860-4867
www.modalshop.com

~ Certificate of Calibration and Compliance ~

Microphone Model: 377B02 Serial Number: 316493 Manufacturer: PCB

Calibration Environmental Conditions

Environmental test conditions as printed on microphone calibration chart.

Reference Equipment

Manufacturer	Model #	Serial #	PCB Control #	Cal Date	Due Date
National Instruments	PCIe-6351	1896F08	CA1918	10/19/18	10/18/19
Larson Davis	PRM915	131	CA1205	1/11/19	1/10/20
Larson Davis	PRM902	4627	CA1551	3/21/19	3/20/20
Larson Davis	PRM916	131	CA1203	3/20/19	3/20/20
Larson Davis	CAL250	4147	LD018	4/15/19	4/15/20
Larson Davis	2201	151	CA2073	4/15/19	4/15/20
PCB	4192	2764626	CA1636	8/20/19	8/21/20
Larson Davis	GPRM902	4162	CA1088	3/21/19	3/20/20
Newport	iTHX-SD/N	1080002	CA1511	2/8/19	2/7/20
Larson Davis	PRA951-4	234	CA1154	10/24/18	10/24/19
Larson Davis	PRM915	124	CA1024	1/11/19	1/10/20
PCB	68510-02	N/A	CA2672	12/21/18	12/20/19
0	0	0	0	not required	not required
0	0	0	0	not required	not required
0	0	0	0	not required	not required

Frequency sweep performed with B&K UA0033 electrostatic actuator.

Condition of Unit

As Found: n/a

As Left: New Unit, In Tolerance

Notes

1. Calibration of reference equipment is traceable to one or more of the following National Labs; NIST, PTB or DFM.
2. This certificate shall not be reproduced, except in full, without written approval from PCB Piezotronics, Inc.
3. Calibration is performed in compliance with ISO 10012-1, ANSI/NCSL Z540.3 and ISO 17025.
4. See Manufacturer's Specification Sheet for a detailed listing of performance specifications.
5. Open Circuit Sensitivity is measured using the insertion voltage method following procedure AT603-5.
6. Measurement uncertainty (95% confidence level with coverage factor of 2) for sensitivity is +/-0.20 dB.
7. Unit calibrated per ACS-20.

Technician: Leonard Lukasik

Date: September 19, 2019

ilac-MRA ACCREDITED

CALIBRATION CERT #1862.01

PCB PIEZOTRONICS VIBRATION DIVISION

3425 Walden Avenue, Depew, New York, 14043

TEL: 888-684-0013 FAX: 716-685-3886 www.pcb.com

IO:CAL112-365173305 4.572+0

~ Calibration Report ~

Microphone Model: 377B02 Serial Number: 316493 Description: 1/2" Free-Field Microphone

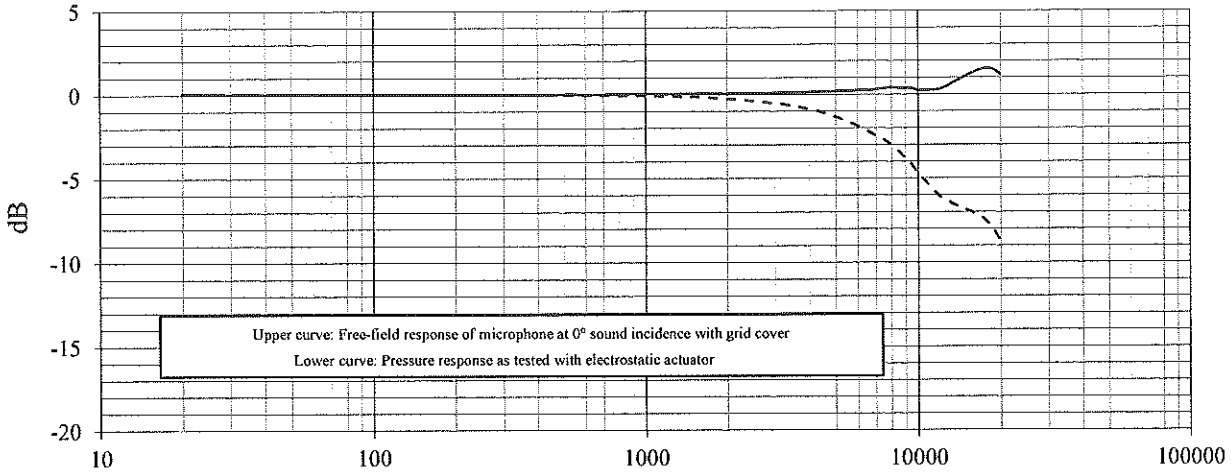
Calibration Data

Open Circuit Sensitivity @ 251.2 Hz: 45.46 mV/Pa
-26.85 dB re 1V/Pa

Polarization Voltage, External: 0 V
Capacitance: 12.4 pF

Temperature: 69 °F (20°C) Ambient Pressure: 998 mbar Relative Humidity: 39 %

Frequency Response (0 dB @ 251.2 Hz)



Freq (Hz)	Lower (dB)	Upper (dB)	Freq (Hz)	Lower (dB)	Upper (dB)	Freq (Hz)	Lower (dB)	Upper (dB)	Freq (Hz)	Lower (dB)	Upper (dB)
20.0	0.08	0.08	1679	-0.16	0.07	7499	-2.71	0.36	-	-	-
25.1	0.05	0.05	1778	-0.21	0.04	7943	-2.97	0.42	-	-	-
31.6	0.06	0.06	1884	-0.24	0.04	8414	-3.35	0.38	-	-	-
39.8	0.06	0.06	1995	-0.26	0.05	8913	-3.75	0.36	-	-	-
50.1	0.06	0.06	2114	-0.27	0.07	9441	-4.16	0.36	-	-	-
63.1	0.04	0.04	2239	-0.30	0.07	10000	-4.70	0.25	-	-	-
79.4	0.04	0.04	2371	-0.35	0.06	10593	-5.15	0.25	-	-	-
100.0	0.03	0.03	2512	-0.39	0.07	11220	-5.61	0.26	-	-	-
125.9	0.02	0.02	2661	-0.43	0.08	11885	-6.02	0.30	-	-	-
158.5	0.02	0.02	2818	-0.48	0.08	12589	-6.32	0.45	-	-	-
199.5	0.01	0.01	2985	-0.52	0.10	13335	-6.51	0.68	-	-	-
251.2	0.00	0.00	3162	-0.57	0.11	14125	-6.70	0.89	-	-	-
316.2	0.00	0.01	3350	-0.63	0.12	14962	-6.87	1.11	-	-	-
398.1	-0.01	-0.01	3548	-0.69	0.13	15849	-7.05	1.30	-	-	-
501.2	-0.02	0.03	3758	-0.78	0.12	16788	-7.26	1.47	-	-	-
631.0	-0.03	0.01	3981	-0.86	0.14	17783	-7.57	1.54	-	-	-
794.3	-0.06	0.03	4217	-0.96	0.15	18837	-8.03	1.48	-	-	-
1000.0	-0.06	0.06	4467	-1.07	0.16	19953	-8.74	1.19	-	-	-
1059.3	-0.08	0.05	4732	-1.20	0.17	-	-	-	-	-	-
1122.0	-0.10	0.04	5012	-1.34	0.19	-	-	-	-	-	-
1188.5	-0.11	0.04	5309	-1.49	0.21	-	-	-	-	-	-
1258.9	-0.10	0.06	5623	-1.67	0.21	-	-	-	-	-	-
1333.5	-0.13	0.06	5957	-1.83	0.24	-	-	-	-	-	-
1412.5	-0.14	0.05	6310	-2.03	0.26	-	-	-	-	-	-
1496.2	-0.15	0.05	6683	-2.28	0.25	-	-	-	-	-	-
1584.9	-0.15	0.06	7080	-2.47	0.31	-	-	-	-	-	-

Technician: Leonard Lukasik Date: September 19, 2019

ilac-MRA A2LA ACCREDITED
CALIBRATION CERT #1862.01

PCB PIEZOTRONICS VIBRATION DIVISION
3425 Walden Avenue, Depew, New York, 14043
TEL: 888-684-0013 FAX: 716-685-3886 www.pcb.com

ID.CAL112-3651733054.572+0

Page 2 of 2

Calibration Certificate

Certificate Number 2019012342

Customer:
The Modal Shop
3149 East Kemper Road
Cincinnati, OH 45241, United States

Model Number	CAL200	***Procedure Number***	D0001.8386		
Serial Number	17283	***Technician***	Scott Montgomery		
Test Results	**Pass**	***Calibration Date***	3 Oct 2019		
Initial Condition	As Manufactured	***Calibration Due***			
		Temperature	24	°C	± 0.3 °C
Description	Larson Davis CAL200 Acoustic Calibrator	***Humidity***	26	%RH	± 3 %RH
		Static Pressure	101.2	kPa	± 1 kPa

Evaluation Method The data is aquired by the insert voltage calibration method using the reference microphone's open circuit sensitivity. Data reported in dB re 20 µPa.

Compliance Standards Compliant to Manufacturer Specifications per D0001.8190 and the following standards:
IEC 60942:2017 ANSI S1.40-2006

Issuing lab certifies that the instrument described above meets or exceeds all specifications as stated in the referenced procedure (unless otherwise noted). It has been calibrated using measurement standards traceable to the SI through the National Institute of Standards and Technology (NIST), or other national measurement institutes, and meets the requirements of ISO/IEC 17025:2005.
Test points marked with a ‡ in the uncertainties column do not fall within this laboratory's scope of accreditation.

The quality system is registered to ISO 9001:2015.

This calibration is a direct comparison of the unit under test to the listed reference standards and did not involve any sampling plans to complete. No allowance has been made for the instability of the test device due to use, time, etc. Such allowances would be made by the customer as needed.

The uncertainties were computed in accordance with the ISO Guide to the Expression of Uncertainty in Measurement (GUM). A coverage factor of approximately 2 sigma (k=2) has been applied to the standard uncertainty to express the expanded uncertainty at approximately 95% confidence level.

Standards Used

Description	Cal Date	Cal Due	Cal Standard
Agilent 34401A DMM	08/15/2019	08/15/2020	001021
Larson Davis Model 2900 Real Time Analyzer	04/02/2019	04/02/2020	001051
Microphone Calibration System	03/04/2019	03/04/2020	005446
1/2" Preamplifier	09/17/2019	09/17/2020	006506
Larson Davis 1/2" Preamplifier 7-pin LEMO	08/06/2019	08/06/2020	006507
1/2 inch Microphone - R1 - 200V	11/12/2018	11/12/2019	006511
Pressure Transducer	06/24/2019	06/24/2020	007310

Output Level

Nominal Level [dB]	Pressure [kPa]	Test Result [dB]	Lower limit [dB]	Upper limit [dB]	Expanded Uncertainty [dB]	Result
114	101.3	114.00	113.80	114.20	0.14	Pass
94	101.2	93.97	93.80	94.20	0.14	Pass

-- End of measurement results--

Frequency

Nominal Level [dB]	Pressure [kPa]	Test Result [Hz]	Lower limit [Hz]	Upper limit [Hz]	Expanded Uncertainty [Hz]	Result
114	101.3	1,000.30	990.00	1,010.00	0.20	Pass
94	101.2	1,000.33	990.00	1,010.00	0.20	Pass

-- End of measurement results--

Total Harmonic Distortion + Noise (THD+N)

Nominal Level [dB]	Pressure [kPa]	Test Result [%]	Lower limit [%]	Upper limit [%]	Expanded Uncertainty [%]	Result
114	101.3	0.32	0.00	2.00	0.25 ‡	Pass
94	101.2	0.37	0.00	2.00	0.25 ‡	Pass

-- End of measurement results--

Level Change Over Pressure

Tested at: 114 dB, 23 °C, 31 %RH

Nominal Pressure [kPa]	Pressure [kPa]	Test Result [dB]	Lower limit [dB]	Upper limit [dB]	Expanded Uncertainty [dB]	Result
108.0	108.1	-0.02	-0.30	0.30	0.04 ‡	Pass
101.3	101.4	0.00	-0.30	0.30	0.04 ‡	Pass
92.0	91.8	0.02	-0.30	0.30	0.04 ‡	Pass
83.0	83.0	0.01	-0.30	0.30	0.04 ‡	Pass
74.0	74.1	-0.02	-0.30	0.30	0.04 ‡	Pass
65.0	65.3	-0.09	-0.30	0.30	0.04 ‡	Pass

-- End of measurement results--

Frequency Change Over Pressure

Tested at: 114 dB, 23 °C, 31 %RH

Nominal Pressure [kPa]	Pressure [kPa]	Test Result [Hz]	Lower limit [Hz]	Upper limit [Hz]	Expanded Uncertainty [Hz]	Result
108.0	108.1	0.00	-10.00	10.00	0.20 ‡	Pass
101.3	101.4	0.00	-10.00	10.00	0.20 ‡	Pass
92.0	91.8	0.00	-10.00	10.00	0.20 ‡	Pass
83.0	83.0	-0.01	-10.00	10.00	0.20 ‡	Pass
74.0	74.1	-0.01	-10.00	10.00	0.20 ‡	Pass
65.0	65.3	-0.02	-10.00	10.00	0.20 ‡	Pass

-- End of measurement results--

Total Harmonic Distortion + Noise (THD+N) Over Pressure

Tested at: 114 dB, 23 °C, 31 %RH

Nominal Pressure [kPa]	Pressure [kPa]	Test Result [%]	Lower limit [%]	Upper limit [%]	Expanded Uncertainty [%]	Result
108.0	108.1	0.32	0.00	2.00	0.25 ‡	Pass
101.3	101.4	0.32	0.00	2.00	0.25 ‡	Pass
92.0	91.8	0.31	0.00	2.00	0.25 ‡	Pass
83.0	83.0	0.31	0.00	2.00	0.25 ‡	Pass
74.0	74.1	0.32	0.00	2.00	0.25 ‡	Pass
65.0	65.3	0.33	0.00	2.00	0.25 ‡	Pass

-- End of measurement results--

Signatory: *Scott Montgomery*

LARSON DAVIS - A PCB PIEZOTRONICS DIV.
1681 West 820 North
Provo, UT 84601, United States
716-684-0001

ACCREDITED Cert. #3622.01

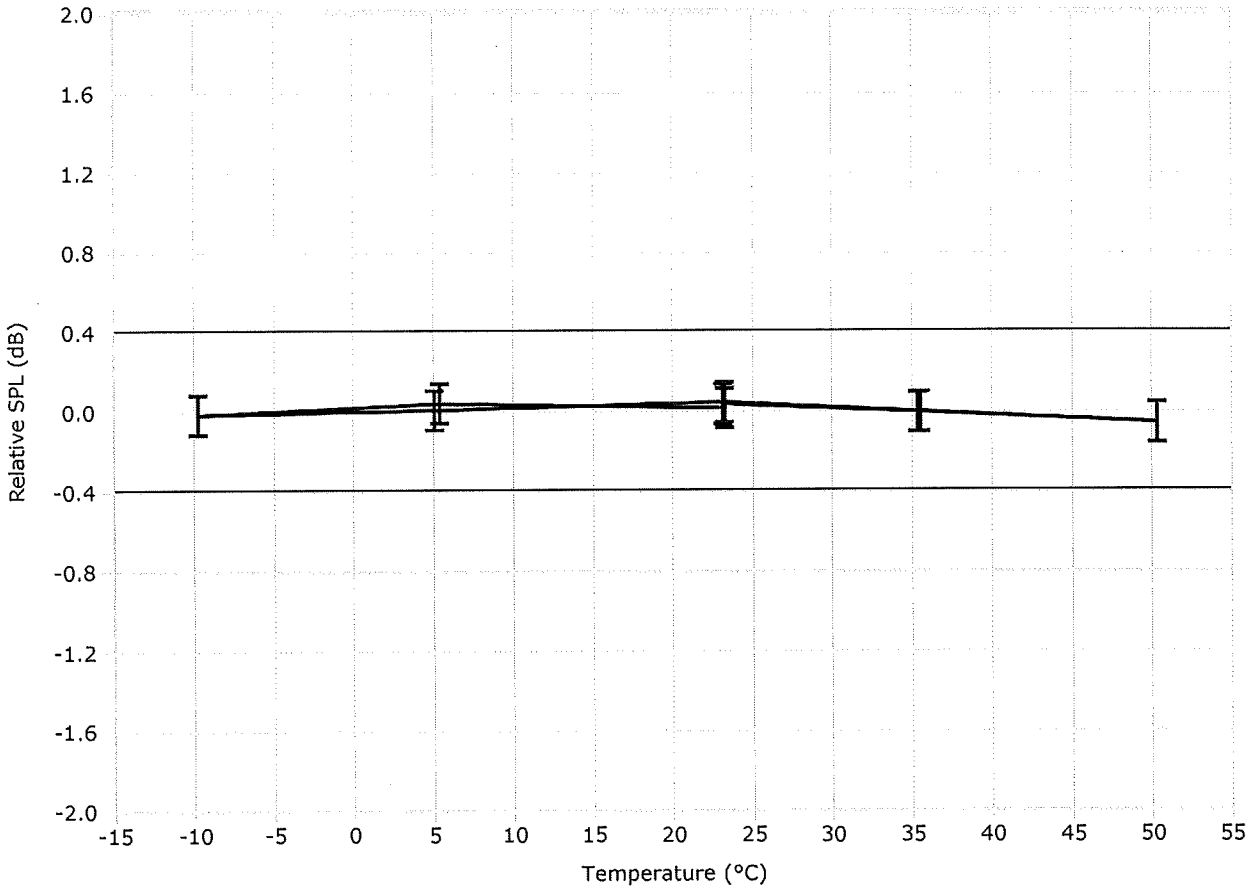
LARSON DAVIS
A PCB PIEZOTRONICS DIV.

Model CAL200 Relative SPL vs. Temperature

Larson Davis Model CAL200 Serial Number: 17283

Model CAL200 Relative SPL vs. Temperature at 50% RH.
A 2559 Mic (SN: 2997) with a PRM901 Preamp (SN: 0201), station 21 was used to check the levels.

Test Date: 17 Sep 2019 5:26:04 PM



0.1dB expanded uncertainty at ~95% confidence level (k=2)

Sequence File: CAL200.SEQ

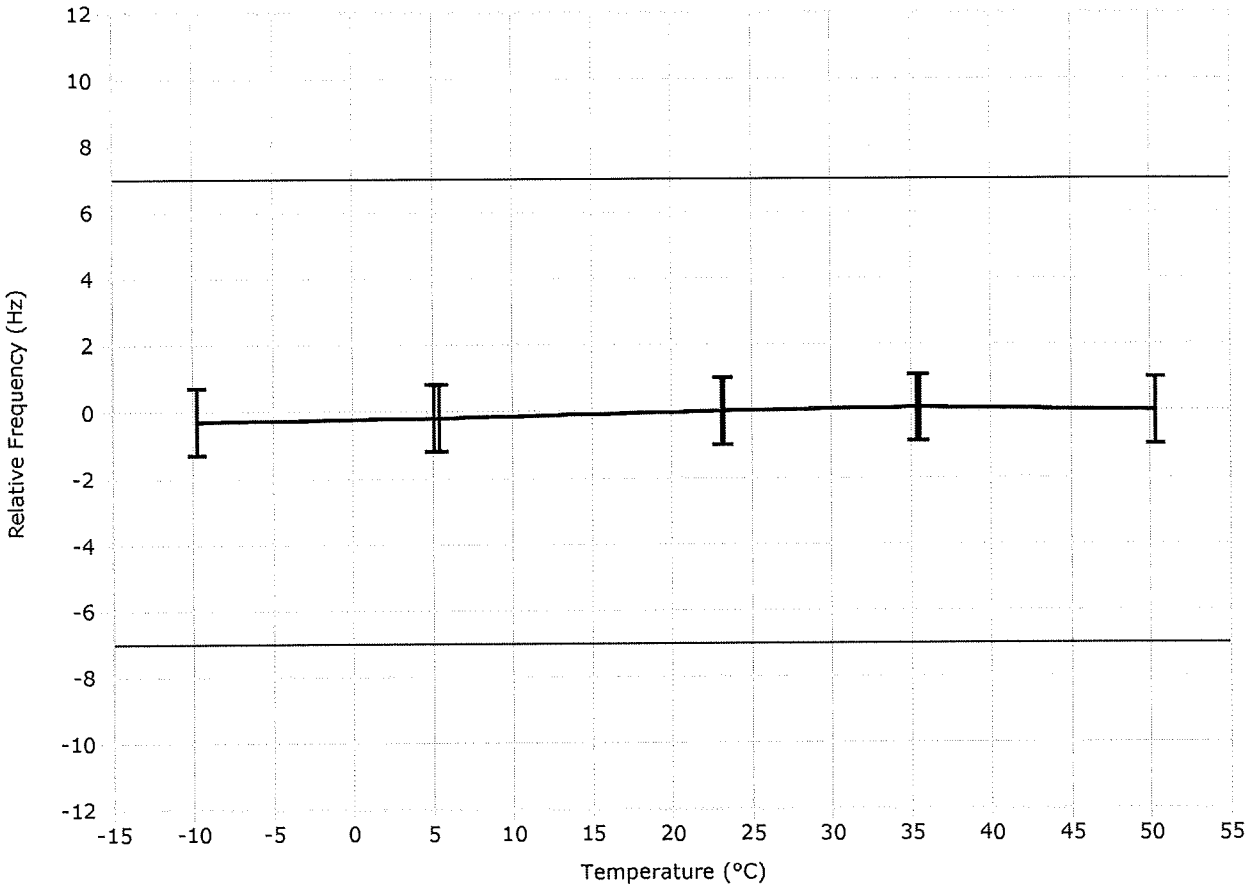
Test Location: Larson Davis, a division of PCB Piezotronics, Inc.
1681 West 820 North, Provo, Utah 84601
Tel: 716 684-0001 www.LarsonDavis.com

Model CAL200 Relative Frequency vs. Temperature

Larson Davis Model CAL200 Serial Number: 17283

Model CAL200 Relative Frequency vs. Temperature at 50% RH.
A 2559 Mic (SN: 2997) with a PRM901 Preamp (SN: 0201), station 21 was used to check the levels.

Test Date: 17 Sep 2019 5:26:04 PM



1.0 Hz expanded uncertainty at ~95% confidence level (k=2)

Sequence File: CAL200.SEQ

Test Location: Larson Davis, a division of PCB Piezotronics, Inc.
1681 West 820 North, Provo, Utah 84601
Tel: 716 684-0001 www.LarsonDavis.com

Appendix D – Predicted Noise Levels

American Structurepoint, Inc. 20 January 2021
Monica Del Real TNM 2.5
Calculated with TNM 2.5

RESULTS: SOUND LEVELS
PROJECT/CONTRACT: I-65 ATL Scott/Clark Counties
RUN: I-65 Build - Seg 1
BARRIER DESIGN: INPUT HEIGHTS
ATMOSPHERICS: 68 deg F, 50% RH

Average pavement type shall be used unless a State highway agency substantiates the use of a different type with approval of FHWA.

Receiver Name	No.	#DUs	Existing* LAeq1h	No Barrier LAeq1h Calculated**	Crit'n	Increase over existing Calculated	Crit'n Sub'l Inc	Type Impact	With Barrier Calculated LAeq1h	Noise Reduction Calculated	Goal	Calculated minus Goal
			dBA	dBA	dBA	dB	dB		dBA	dB	dB	dB
R1	8	1	60.7	61.4	66	0.7	15	----	61.4	0.0	7	-7.0
R2	9	1	61.9	62.5	66	0.6	15	----	62.5	0.0	7	-7.0
R3	10	1	63.4	63.9	66	0.5	15	----	63.9	0.0	7	-7.0
R4	11	1	65.1	66.0	66	0.9	15	Snd Lvl	66.0	0.0	7	-7.0
R5	12	1	68.3	69.4	66	1.1	15	Snd Lvl	69.4	0.0	7	-7.0
R6	13	1	74.7	75.1	66	0.4	15	Snd Lvl	75.1	0.0	7	-7.0
R7	14	1	75.0	75.6	66	0.6	15	Snd Lvl	75.6	0.0	7	-7.0
R8	15	1	65.6	66.9	66	1.3	15	Snd Lvl	66.9	0.0	7	-7.0
R9	16	1	63.5	64.8	66	1.3	15	----	64.8	0.0	7	-7.0
R10	17	1	61.7	63.2	66	1.5	15	----	63.2	0.0	7	-7.0
R11	18	1	60.5	62.0	66	1.5	15	----	62.0	0.0	7	-7.0
R12	19	1	64.8	66.0	66	1.2	15	Snd Lvl	66.0	0.0	7	-7.0
R205	20	1	64.5	65.3	66	0.8	15	----	65.3	0.0	7	-7.0
R206	21	1	64.4	65.3	66	0.9	15	----	65.3	0.0	7	-7.0
R207	22	1	65.6	66.5	66	0.9	15	Snd Lvl	66.5	0.0	7	-7.0
R208	23	1	62.2	63.3	66	1.1	15	----	63.3	0.0	7	-7.0
R209	24	1	65.3	66.4	66	1.1	15	Snd Lvl	66.4	0.0	7	-7.0
R210	25	1	67.1	67.9	66	0.8	15	Snd Lvl	67.9	0.0	7	-7.0
R211	26	1	72.7	73.4	66	0.7	15	Snd Lvl	73.4	0.0	7	-7.0
R212	27	1	68.7	69.8	66	1.1	15	Snd Lvl	69.8	0.0	7	-7.0
R213	28	1	63.6	64.1	66	0.5	15	----	64.1	0.0	7	-7.0

Dwelling Units	# DUs	Noise Reduction Min	Avg	Max

*2021 predicted noise level
**2045 predicted noise level

			dB	dB	dB							
All Selected		21	0.0	0.0	0.0							
All Impacted		11	0.0	0.0	0.0							
All that meet NR Goal		0	0.0	0.0	0.0							

American Structurepoint, Inc. 20 January 2021
Monica Del Real TNM 2.5
Calculated with TNM 2.5

RESULTS: SOUND LEVELS
PROJECT/CONTRACT: I-65 ATL Scott/Clark Counties
RUN: I-65 Build - Seg 2
BARRIER DESIGN: INPUT HEIGHTS
ATMOSPHERICS: 68 deg F, 50% RH

Average pavement type shall be used unless a State highway agency substantiates the use of a different type with approval of FHWA.

Receiver Name	No.	#DUs	Existing* LAeq1h	No Barrier LAeq1h Calculated**	Crit'n	Increase over existing Calculated	Crit'n Sub'l Inc	Type Impact	With Barrier Calculated LAeq1h	Noise Reduction Calculated	Goal	Calculated minus Goal
			dBA	dBA	dBA	dB	dB		dBA	dB	dB	dB
R13	8	1	62.9	63.7	66	0.8	15	----	63.7	0.0	7	-7.0
R14	9	1	63.3	64.2	66	0.9	15	----	64.2	0.0	7	-7.0
R15	10	1	71.3	72.3	66	1.0	15	Snd Lvl	72.3	0.0	7	-7.0
R16	11	1	72.0	73.0	66	1.0	15	Snd Lvl	73.0	0.0	7	-7.0
R17	12	1	63.5	64.7	66	1.2	15	----	64.7	0.0	7	-7.0
R18	13	1	69.2	70.4	66	1.2	15	Snd Lvl	70.4	0.0	7	-7.0
R19-20	14	2	66.5	68.0	66	1.5	15	Snd Lvl	68.0	0.0	7	-7.0
R21-22	16	2	63.8	65.1	66	1.3	15	----	65.1	0.0	7	-7.0
R23-24	18	2	61.9	63.1	66	1.2	15	----	63.1	0.0	7	-7.0
R25-26	21	2	62.6	63.9	66	1.3	15	----	63.9	0.0	7	-7.0
R27-28	23	2	63.2	64.5	66	1.3	15	----	64.5	0.0	7	-7.0
R29-30	25	2	64.0	65.5	66	1.5	15	----	65.5	0.0	7	-7.0
R31-32	27	2	65.2	66.6	66	1.4	15	Snd Lvl	66.6	0.0	7	-7.0
R33	29	1	66.4	67.8	66	1.4	15	Snd Lvl	67.8	0.0	7	-7.0
R34-35	30	2	72.5	73.4	66	0.9	15	Snd Lvl	73.4	0.0	7	-7.0
R36-37	32	2	73.0	73.8	66	0.8	15	Snd Lvl	73.8	0.0	7	-7.0
R38-39	34	2	71.2	72.1	66	0.9	15	Snd Lvl	72.1	0.0	7	-7.0
R40-41	36	2	66.4	67.7	66	1.3	15	Snd Lvl	67.7	0.0	7	-7.0
R42-43	38	2	63.4	64.4	66	1.0	15	----	64.4	0.0	7	-7.0
R44-45	40	2	61.3	62.4	66	1.1	15	----	62.4	0.0	7	-7.0
R46-47	43	2	60.7	61.7	66	1.0	15	----	61.7	0.0	7	-7.0
R48-49	44	2	61.7	62.5	66	0.8	15	----	62.5	0.0	7	-7.0
R50	45	1	65.9	66.9	66	1.0	15	Snd Lvl	66.9	0.0	7	-7.0
R51	46	1	70.7	71.9	66	1.2	15	Snd Lvl	71.9	0.0	7	-7.0

*2021 predicted noise level
**2045 predicted noise level

R52	47	1	73.1	73.6	66	0.5	15	Snd Lvl	73.6	0.0	7	-7.0
R53	48	1	65.9	66.8	66	0.9	15	Snd Lvl	66.8	0.0	7	-7.0
R54	49	1	65.0	65.9	66	0.9	15	----	65.9	0.0	7	-7.0
R55	50	1	64.0	64.9	66	0.9	15	----	64.9	0.0	7	-7.0
R56-57	51	2	61.2	62.4	66	1.2	15	----	62.4	0.0	7	-7.0
R58	52	1	60.4	61.0	66	0.6	15	----	61.0	0.0	7	-7.0
R59	53	1	59.4	60.2	66	0.8	15	----	60.2	0.0	7	-7.0
R60-63	54	4	61.2	61.9	66	0.7	15	----	61.9	0.0	7	-7.0
R64	55	1	62.0	62.8	66	0.8	15	----	62.8	0.0	7	-7.0
R65-68	56	4	59.4	60.2	66	0.8	15	----	60.2	0.0	7	-7.0
R69	57	1	59.9	60.8	66	0.9	15	----	60.8	0.0	7	-7.0
R70	58	1	61.2	62.1	66	0.9	15	----	62.1	0.0	7	-7.0
R71	59	1	60.9	61.6	66	0.7	15	----	61.6	0.0	7	-7.0
R72	60	1	68.3	69.1	66	0.8	15	Snd Lvl	69.1	0.0	7	-7.0
R73	61	1	65.1	66.0	66	0.9	15	Snd Lvl	66.0	0.0	7	-7.0
R74-75	62	2	68.9	69.8	66	0.9	15	Snd Lvl	69.8	0.0	7	-7.0
R76	63	1	71.7	71.8	66	0.1	15	Snd Lvl	71.8	0.0	7	-7.0
R77	64	1	67.8	68.2	66	0.4	15	Snd Lvl	68.2	0.0	7	-7.0
R78	65	1	70.1	70.6	66	0.5	15	Snd Lvl	70.6	0.0	7	-7.0
R79	66	1	66.2	66.6	66	0.4	15	Snd Lvl	66.6	0.0	7	-7.0
R80	67	1	73.9	74.4	66	0.5	15	Snd Lvl	74.4	0.0	7	-7.0
R81	68	1	75.3	75.8	66	0.5	15	Snd Lvl	75.8	0.0	7	-7.0
R82	69	1	70.3	71.3	66	1.0	15	Snd Lvl	71.3	0.0	7	-7.0
R83	70	1	62.9	64.0	66	1.1	15	----	64.0	0.0	7	-7.0
R84	71	1	67.0	68.3	66	1.3	15	Snd Lvl	68.3	0.0	7	-7.0
R85	72	1	70.5	71.6	66	1.1	15	Snd Lvl	71.6	0.0	7	-7.0
R187	75	1	61.8	63.1	66	1.3	15	----	63.1	0.0	7	-7.0
R188	76	1	63.1	64.3	66	1.2	15	----	64.3	0.0	7	-7.0
R189	78	1	61.1	62.1	66	1.0	15	----	62.1	0.0	7	-7.0
R190	79	1	61.4	62.4	66	1.0	15	----	62.4	0.0	7	-7.0
R191	80	1	70.8	71.8	66	1.0	15	Snd Lvl	71.8	0.0	7	-7.0
R192	81	1	63.0	64.2	66	1.2	15	----	64.2	0.0	7	-7.0
R193	82	1	61.8	62.9	66	1.1	15	----	62.9	0.0	7	-7.0
R194	83	1	66.1	67.3	66	1.2	15	Snd Lvl	67.3	0.0	7	-7.0
R195-196	84	2	66.6	67.5	66	0.9	15	Snd Lvl	67.5	0.0	7	-7.0
R197	85	1	68.3	68.9	66	0.6	15	Snd Lvl	68.9	0.0	7	-7.0
R198	86	1	70.8	71.4	66	0.6	15	Snd Lvl	71.4	0.0	7	-7.0
R199	87	1	69.9	71.0	66	1.1	15	Snd Lvl	71.0	0.0	7	-7.0
R200	88	1	62.3	63.2	66	0.9	15	----	63.2	0.0	7	-7.0
R201	89	1	70.2	71.4	66	1.2	15	Snd Lvl	71.4	0.0	7	-7.0
R202	90	1	72.2	72.8	66	0.6	15	Snd Lvl	72.8	0.0	7	-7.0

R203	91	1	70.4	71.4	66	1.0	15	Snd Lvl	71.4	0.0	7	-7.0
R204	92	1	62.5	63.3	66	0.8	15	----	63.3	0.0	7	-7.0

Dwelling Units	**# DUs**	**Noise Reduction**		
		Min	**Avg**	**Max**
		dB	**dB**	**dB**
All Selected	91	0.0	0.0	0.0
All Impacted	43	0.0	0.0	0.0
All that meet NR Goal	0	0.0	0.0	0.0

American Structurepoint, Inc.
Monica Del Real

20 January 2021
TNM 2.5
Calculated with TNM 2.5

RESULTS: SOUND LEVELS
PROJECT/CONTRACT: I-65 ATL Scott/Clark Counties
RUN: I-65 Build - Seg 3
BARRIER DESIGN: INPUT HEIGHTS
ATMOSPHERICS: 68 deg F, 50% RH

Average pavement type shall be used unless a State highway agency substantiates the use of a different type with approval of FHWA.

Receiver Name	No.	#DUs	Existing* LAeq1h	No Barrier LAeq1h Calculated**	Crit'n	Increase over existing Calculated	Crit'n Sub'l Inc	Type Impact	With Barrier Calculated LAeq1h	Noise Reduction Calculated	Noise Reduction Goal	Calculated minus Goal
			dBA	dBA	dBA	dB	dB		dBA	dB	dB	dB
R86	8	1	64.2	65.2	66	1.0	15	----	65.2	0.0	7	-7.0
R87	9	1	70.2	70.5	66	0.3	15	Snd Lvl	70.5	0.0	7	-7.0
R88	10	1	70.4	71.2	66	0.8	15	Snd Lvl	71.2	0.0	7	-7.0
R184	11	1	70.4	71.3	66	0.9	15	Snd Lvl	71.3	0.0	7	-7.0
R185	12	1	71.1	72.0	66	0.9	15	Snd Lvl	72.0	0.0	7	-7.0
R186	14	1	60.8	61.4	66	0.6	15	----	61.4	0.0	7	-7.0
R214	16	1	64.7	65.7	66	1.0	15	----	65.7	0.0	7	-7.0
R215	19	1	70.1	71.5	66	1.4	15	Snd Lvl	71.5	0.0	7	-7.0

Dwelling Units	# DUs	Noise Reduction Min	Avg	Max
		dB	dB	dB
All Selected	8	0.0	0.0	0.0
All Impacted	5	0.0	0.0	0.0
All that meet NR Goal	0	0.0	0.0	0.0

*2021 predicted noise level
**2045 predicted noise level

American Structurepoint, Inc.
Monica Del Real

20 January 2021
TNM 2.5
Calculated with TNM 2.5

RESULTS: SOUND LEVELS
PROJECT/CONTRACT: I-65 ATL Scott/Clark Counties
RUN: I-65 Build - Seg 4
BARRIER DESIGN: INPUT HEIGHTS
ATMOSPHERICS: 68 deg F, 50% RH

Average pavement type shall be used unless a State highway agency substantiates the use of a different type with approval of FHWA.

Receiver Name	No.	#DUs	Existing* LAeq1h	No Barrier LAeq1h Calculated**	Crit'n	Increase over existing Calculated	Crit'n Sub'l Inc	Type Impact	With Barrier Calculated LAeq1h	Noise Reduction Calculated	Noise Reduction Goal	Calculated minus Goal
			dBA	dBA	dBA	dB	dB		dBA	dB	dB	dB
R89	9	1	65.2	66.0	66	0.8	15	Snd Lvl	66.0	0.0	7	-7.0
R177	10	1	72.1	73.1	66	1.0	15	Snd Lvl	73.1	0.0	7	-7.0
R178	11	1	63.7	64.5	66	0.8	15	----	64.5	0.0	7	-7.0
R179	12	1	68.8	69.5	66	0.7	15	Snd Lvl	69.5	0.0	7	-7.0
R180	13	1	66.3	67.7	66	1.4	15	Snd Lvl	67.7	0.0	7	-7.0
R181	14	1	65.7	66.9	66	1.2	15	Snd Lvl	66.9	0.0	7	-7.0
R182	15	1	64.5	65.7	66	1.2	15	----	65.7	0.0	7	-7.0
R183	16	1	64.3	65.1	66	0.8	15	----	65.1	0.0	7	-7.0

Dwelling Units	# DUs	Noise Reduction Min	Avg	Max
		dB	dB	dB
All Selected	8	0.0	0.0	0.0
All Impacted	5	0.0	0.0	0.0
All that meet NR Goal	0	0.0	0.0	0.0

*2021 predicted noise level
**2045 predicted noise level

American Structurepoint, Inc. 20 January 2021
Monica Del Real TNM 2.5
Calculated with TNM 2.5

RESULTS: SOUND LEVELS
PROJECT/CONTRACT: I-65 ATL Scott/Clark Counties
RUN: I-65 Build - Seg 5
BARRIER DESIGN: INPUT HEIGHTS
ATMOSPHERICS: 68 deg F, 50% RH

Average pavement type shall be used unless a State highway agency substantiates the use of a different type with approval of FHWA.

Receiver Name	No.	#DUs	Existing* LAeq1h	No Barrier LAeq1h Calculated**	Crit'n	Increase over existing Calculated	Crit'n Sub'l Inc	Type Impact	With Barrier Calculated LAeq1h	Noise Reduction Calculated	Noise Reduction Goal	Calculated minus Goal
			dBA	dBA	dBA	dB	dB		dBA	dB	dB	dB
R90	9	1	64.1	64.7	66	0.6	15	----	64.7	0.0	7	-7.0
R91	10	1	61.7	62.7	66	1.0	15	----	62.7	0.0	7	-7.0
R92	11	1	62.3	63.0	66	0.7	15	----	63.0	0.0	7	-7.0
R93	12	1	61.9	62.7	66	0.8	15	----	62.7	0.0	7	-7.0
R94-95	13	2	62.1	63.6	66	1.5	15	----	63.6	0.0	7	-7.0
R96-97	14	2	65.6	66.8	66	1.2	15	Snd Lvl	66.8	0.0	7	-7.0
R98	15	1	74.4	75.1	66	0.7	15	Snd Lvl	75.1	0.0	7	-7.0
R99	16	1	70.7	71.9	66	1.2	15	Snd Lvl	71.9	0.0	7	-7.0
R100-101	17	2	62.5	64.0	66	1.5	15	----	64.0	0.0	7	-7.0
R170	18	1	65.9	67.1	66	1.2	15	Snd Lvl	67.1	0.0	7	-7.0
R171	19	1	69.6	70.7	66	1.1	15	Snd Lvl	70.7	0.0	7	-7.0
R172-173	20	2	66.8	68.0	66	1.2	15	Snd Lvl	68.0	0.0	7	-7.0
R174	21	1	63.7	64.4	66	0.7	15	----	64.4	0.0	7	-7.0
R175	22	1	61.1	62.0	66	0.9	15	----	62.0	0.0	7	-7.0
R176	23	1	61.2	62.4	66	1.2	15	----	62.4	0.0	7	-7.0

Dwelling Units	# DUs	Noise Reduction Min	Avg	Max
		dB	dB	dB
All Selected	19	0.0	0.0	0.0
All Impacted	8	0.0	0.0	0.0
All that meet NR Goal	0	0.0	0.0	0.0

*2021 predicted noise level
**2045 predicted noise level

American Structurepoint, Inc. 25 March 2021
Monica Del Real TNM 2.5
Calculated with TNM 2.5

RESULTS: SOUND LEVELS
PROJECT/CONTRACT: I-65 ATL Scott/Clark Counties
RUN: I-65 Build - Seg 6
BARRIER DESIGN: INPUT HEIGHTS
ATMOSPHERICS: 68 deg F, 50% RH

Average pavement type shall be used unless a State highway agency substantiates the use of a different type with approval of FHWA.

Receiver Name	No.	#DUs	Existing* LAeq1h	No Barrier LAeq1h Calculated**	Crit'n	Increase over existing Calculated	Crit'n Sub'l Inc	Type Impact	With Barrier Calculated LAeq1h	Noise Reduction Calculated	Goal	Calculated minus Goal
			dBA	dBA	dBA	dB	dB		dBA	dB	dB	dB
R102	9	1	70.7	71.6	66	0.9	15	Snd Lvl	71.6	0.0	7	-7.0
R103	10	1	73.6	74.5	66	0.9	15	Snd Lvl	74.5	0.0	7	-7.0
R104	11	1	69.0	69.9	66	0.9	15	Snd Lvl	69.9	0.0	7	-7.0
R105	12	1	66.3	67.1	66	0.8	15	Snd Lvl	67.1	0.0	7	-7.0
R106	13	1	64.6	65.4	66	0.8	15	----	65.4	0.0	7	-7.0
R107-108	14	2	62.8	63.5	66	0.7	15	----	63.5	0.0	7	-7.0
R109-R110	15	2	63.0	63.5	66	0.5	15	----	63.5	0.0	7	-7.0
R111-112	16	2	63.0	63.8	66	0.8	15	----	63.8	0.0	7	-7.0
R113	18	1	71.9	73.0	66	1.1	15	Snd Lvl	73.0	0.0	7	-7.0
R114	19	1	65.0	66.2	66	1.2	15	Snd Lvl	66.2	0.0	7	-7.0
R115	20	1	66.5	67.8	66	1.3	15	Snd Lvl	67.8	0.0	7	-7.0
R116	21	1	63.8	65.0	66	1.2	15	----	65.0	0.0	7	-7.0
R162	23	1	72.3	73.1	66	0.8	15	Snd Lvl	73.1	0.0	7	-7.0
R163	24	1	63.8	65.1	66	1.3	15	----	65.1	0.0	7	-7.0
R164	25	1	63.0	64.2	66	1.2	15	----	64.2	0.0	7	-7.0
R165	26	1	64.4	65.0	66	0.6	15	----	65.0	0.0	7	-7.0
R166	27	1	66.8	67.6	66	0.8	15	Snd Lvl	67.6	0.0	7	-7.0
R167	28	1	70.2	71.5	66	1.3	15	Snd Lvl	71.5	0.0	7	-7.0
R168	29	1	70.7	71.8	66	1.1	15	Snd Lvl	71.8	0.0	7	-7.0
R169	30	1	62.1	63.2	66	1.1	15	----	63.2	0.0	7	-7.0
R216	32	1	71.8	72.6	66	0.8	15	Snd Lvl	72.6	0.0	7	-7.0

Dwelling Units	# DUs	Noise Reduction Min	Avg	Max

*2021 predicted noise level
**2045 predicted noise level

			dB	dB	dB							
All Selected		24	0.0	0.0	0.0							
All Impacted		12	0.0	0.0	0.0							
All that meet NR Goal		0	0.0	0.0	0.0							

American Structurepoint, Inc.
Monica Del Real

20 January 2021
TNM 2.5
Calculated with TNM 2.5

RESULTS: SOUND LEVELS
PROJECT/CONTRACT: I-65 ATL Scott/Clark Counties
RUN: I-65 Build - Seg 7
BARRIER DESIGN: INPUT HEIGHTS
ATMOSPHERICS: 68 deg F, 50% RH

Average pavement type shall be used unless a State highway agency substantiates the use of a different type with approval of FHWA.

Receiver Name	No.	#DUs	Existing* LAeq1h	No Barrier LAeq1h Calculated**	Crit'n	Increase over existing Calculated	Crit'n Sub'l Inc	Type Impact	With Barrier Calculated LAeq1h	Noise Reduction Calculated	Noise Reduction Goal	Calculated minus Goal
			dBA	dBA	dBA	dB	dB		dBA	dB	dB	dB
R117	9	1	66.1	67.2	66	1.1	15	Snd Lvl	67.2	0.0	7	-7.0
R118	10	1	62.7	63.9	66	1.2	15	----	63.9	0.0	7	-7.0
R119	11	1	68.4	69.2	66	0.8	15	Snd Lvl	69.2	0.0	7	-7.0
R120	12	1	65.4	66.4	66	1.0	15	Snd Lvl	66.4	0.0	7	-7.0
R121	13	1	70.2	71.0	66	0.8	15	Snd Lvl	71.0	0.0	7	-7.0
R159	14	1	65.1	66.4	66	1.3	15	Snd Lvl	66.4	0.0	7	-7.0
R160	15	1	69.3	71.0	66	1.7	15	Snd Lvl	71.0	0.0	7	-7.0
R161	16	1	66.4	67.6	66	1.2	15	Snd Lvl	67.6	0.0	7	-7.0

Dwelling Units	# DUs	Noise Reduction Min	Avg	Max
		dB	dB	dB
All Selected	8	0.0	0.0	0.0
All Impacted	7	0.0	0.0	0.0
All that meet NR Goal	0	0.0	0.0	0.0

*2021 predicted noise level
**2045 predicted noise level

American Structurepoint, Inc. 20 January 2021
Monica Del Real TNM 2.5
Calculated with TNM 2.5

RESULTS: SOUND LEVELS
PROJECT/CONTRACT: I-65 ATL Scott/Clark Counties
RUN: I-65 Build - Seg 8
BARRIER DESIGN: INPUT HEIGHTS
ATMOSPHERICS: 68 deg F, 50% RH

Average pavement type shall be used unless a State highway agency substantiates the use of a different type with approval of FHWA.

Receiver Name	No.	#DUs	Existing* LAeq1h	No Barrier LAeq1h Calculated**	Crit'n	Increase over existing Calculated	Crit'n Sub'l Inc	Type Impact	With Barrier Calculated LAeq1h	Noise Reduction Calculated	Goal	Calculated minus Goal
			dBA	dBA	dBA	dB	dB		dBA	dB	dB	dB
R122	9	1	71.7	72.1	66	0.4	15	Snd Lvl	72.1	0.0	7	-7.0
R123	10	1	64.3	64.7	66	0.4	15	----	64.7	0.0	7	-7.0
R124-125	11	2	61.0	61.5	66	0.5	15	----	61.5	0.0	7	-7.0
R126	13	1	68.7	69.2	66	0.5	15	Snd Lvl	69.2	0.0	7	-7.0
R127	14	1	64.8	65.2	66	0.4	15	----	65.2	0.0	7	-7.0
R128	15	1	61.7	62.2	66	0.5	15	----	62.2	0.0	7	-7.0
R131-132	16	2	63.7	66.1	66	2.4	15	Snd Lvl	66.1	0.0	7	-7.0
R130-133	17	4	61.3	61.9	66	0.6	15	----	61.9	0.0	7	-7.0
R129-134	18	5	59.0	59.5	66	0.5	15	----	59.5	0.0	7	-7.0
R135	19	1	58.5	59.0	66	0.5	15	----	59.0	0.0	7	-7.0
R136	20	1	59.4	59.9	66	0.5	15	----	59.9	0.0	7	-7.0
R137	21	1	62.2	62.7	66	0.5	15	----	62.7	0.0	7	-7.0
R138	22	1	66.0	66.5	66	0.5	15	Snd Lvl	66.5	0.0	7	-7.0
R139	23	1	71.4	71.9	66	0.5	15	Snd Lvl	71.9	0.0	7	-7.0
R140	24	1	68.9	69.4	66	0.5	15	Snd Lvl	69.4	0.0	7	-7.0
R141	25	1	63.5	64.0	66	0.5	15	----	64.0	0.0	7	-7.0
R142-143	26	2	63.1	63.6	66	0.5	15	----	63.6	0.0	7	-7.0
R144	27	1	62.5	62.9	66	0.4	15	----	62.9	0.0	7	-7.0
R145	28	1	67.2	67.7	77	0.5	15	----	67.7	0.0	7	-7.0
R146	29	1	69.5	70.0	66	0.5	15	Snd Lvl	70.0	0.0	7	-7.0
R147	30	1	66.3	66.8	77	0.5	15	----	66.8	0.0	7	-7.0
R148	31	1	70.9	71.4	66	0.5	15	Snd Lvl	71.4	0.0	7	-7.0
R149	32	1	72.3	72.8	66	0.5	15	Snd Lvl	72.8	0.0	7	-7.0
R150	33	1	68.6	69.1	66	0.5	15	Snd Lvl	69.1	0.0	7	-7.0

*2021 predicted noise level
**2045 predicted noise level

R151	34	1	63.7	64.2	66	0.5	15	----	64.2	0.0	7	-7.0
R152	35	1	67.9	68.4	66	0.5	15	Snd Lvl	68.4	0.0	7	-7.0
R153	36	1	69.8	70.3	66	0.5	15	Snd Lvl	70.3	0.0	7	-7.0
R154	37	1	69.7	70.2	66	0.5	15	Snd Lvl	70.2	0.0	7	-7.0
R155	38	1	69.1	69.6	66	0.5	15	Snd Lvl	69.6	0.0	7	-7.0
R156	39	1	68.4	68.8	66	0.4	15	Snd Lvl	68.8	0.0	7	-7.0
R157	40	1	66.6	67.1	66	0.5	15	Snd Lvl	67.1	0.0	7	-7.0
R158	41	1	68.0	68.5	66	0.5	15	Snd Lvl	68.5	0.0	7	-7.0

Dwelling Units	**# DUs**	**Noise Reduction**		
		Min	**Avg**	**Max**
		dB	**dB**	**dB**
All Selected	42	0.0	0.0	0.0
All Impacted	18	0.0	0.0	0.0
All that meet NR Goal	0	0.0	0.0	0.0

Appendix E – Noise Barrier Analysis and Optimization

Noise Barrier Optimization - Noise Barrier 1 (NB1)			
	Analysis 1.0	**Analysis 2.0**	**Analysis 3.0**
Total Number of Impacted Receptors	5	5	5
Impacted Receptors Receiving 5 dBA Decrease	5	5	3
% Impacted Receptors Receiving 5dBA Decrease	100%	100%	60%
Total Number of 1st Row Receptors	2	2	2
First Row Receptors Receiving 7dBA Decrease	2	2	2
% First Row Receptors Meeting 7dBA Decrease	100%	100%	100%
Total Number of Benefited Receptors	5	6	3
Total Barrier Cost	$ 395,860.00	$ 481,337.00	$ 310,420.00
Cost per Benefitted Receptor	$ 79,172.00	$ 80,222.83	$ 103,473.33

Noise Barrier Optimization - NB2	
	Analysis 1.0
Total Number of Impacted Receptors	1
Impacted Receptors Receiving 5 dBA Decrease	0
% Impacted Receptors Receiving 5dBA Decrease	0%
Total Number of 1st Row Receptors	1
First Row Receptors Receiving 7dBA Decrease	0
% First Row Receptors Meeting 7dBA Decrease	0%
Total Number of Benefited Receptors	0
Total Barrier Cost	N/A
Cost per Benefitted Receptor	N/A

Noise Barrier Optimization - NB3			
	Analysis 1.0	**Analysis 2.0**	**Analysis 3.0**
Total Number of Impacted Receptors	16	16	16
Impacted Receptors Receiving 5 dBA Decrease	15	16	14
% Impacted Receptors Receiving 5dBA Decrease	94%	100%	88%
Total Number of 1st Row Receptors	9	9	9
First Row Receptors Receiving 7dBA Decrease	7	7	6
% First Row Receptors Meeting 7dBA Decrease	78%	78%	67%
Total Number of Benefited Receptors	25	26	22
Total Barrier Cost	$ 614,786.00	$ 767,667.00	$ 560,586.00
Cost per Benefitted Receptor	$ 24,591.44	$ 29,525.65	$ 25,481.18

Due to cost reasonable criteria of $25,000 per benefited receptor, benefit was not determined feasible and reasonable for R15

Noise Barrier Optimization - NB4			
	Analysis 1.0	**Analysis 2.0**	**Analysis 3.0**
Total Number of Impacted Receptors	4	4	4
Impacted Receptors Receiving 5 dBA Decrease	4	4	4
% Impacted Receptors Receiving 5dBA Decrease	100%	100%	100%
Total Number of 1st Row Receptors	2	2	2
First Row Receptors Receiving 7dBA Decrease	2	2	2
% First Row Receptors Meeting 7dBA Decrease	100%	100%	100%
Total Number of Benefited Receptors	4	5	5
Total Barrier Cost	$ 447,141.00	$ 448,125.00	$ 449,986.00
Cost per Benefitted Receptor	$ 111,785.25	$ 89,625.00	$ 89,997.20

Noise Barrier Optimization - NB5			
	Analysis 1.0	**Analysis 2.0**	**Analysis 3.0**
Total Number of Impacted Receptors	13	13	13
Impacted Receptors Receiving 5 dBA Decrease	13	11	11
% Impacted Receptors Receiving 5dBA Decrease	100%	85%	85%
Total Number of 1st Row Receptors	8	8	8
First Row Receptors Receiving 7dBA Decrease	7	5	5
% First Row Receptors Meeting 7dBA Decrease	88%	63%	63%
Total Number of Benefited Receptors	14	12	12
Total Barrier Cost	$ 1,083,809.00	$ 804,511.00	$ 877,666.00
Cost per Benefitted Receptor	$ 77,414.93	$ 67,042.58	$ 73,138.83

Noise Barrier Optimization - NB6		
	Analysis 1.0	Analysis 2.0
Total Number of Impacted Receptors	1	1
Impacted Receptors Receiving 5 dBA Decrease	1	1
% Impacted Receptors Receiving 5dBA Decrease	100%	100%
Total Number of 1st Row Receptors	1	1
First Row Receptors Receiving 7dBA Decrease	1	1
% First Row Receptors Meeting 7dBA Decrease	100%	100%
Total Number of Benefited Receptors	1	1
Total Barrier Cost	$ 441,471.00	$ 347,470.00
Cost per Benefitted Receptor	$ 441,471.00	$ 347,470.00

Noise Barrier Optimization - NB7			
	Analysis 1.0	**Analysis 2.0**	**Analysis 3.0**
Total Number of Impacted Receptors	4	4	4
Impacted Receptors Receiving 5 dBA Decrease	4	4	4
% Impacted Receptors Receiving 5dBA Decrease	100%	100%	100%
Total Number of 1st Row Receptors	2	2	2
First Row Receptors Receiving 7dBA Decrease	2	2	2
% First Row Receptors Meeting 7dBA Decrease	100%	100%	100%
Total Number of Benefited Receptors	4	4	4
Total Barrier Cost	$ 507,405.00	$ 465,396.00	$ 456,390.00
Cost per Benefitted Receptor	$ 126,851.25	$ 116,349.00	$ 114,097.50

Noise Barrier Optimization - NB8			
	Analysis 1.0	**Analysis 2.0**	**Analysis 3.0**
Total Number of Impacted Receptors	7	7	7
Impacted Receptors Receiving 5 dBA Decrease	7	7	5
% Impacted Receptors Receiving 5dBA Decrease	100%	100%	71%
Total Number of 1st Row Receptors	4	4	4
First Row Receptors Receiving 7dBA Decrease	3	2	2
% First Row Receptors Meeting 7dBA Decrease	75%	50%	50%
Total Number of Benefited Receptors	14	14	12
Total Barrier Cost	$ 1,007,964.00	$ 782,975.00	$ 575,982.00
Cost per Benefitted Receptor	$ 71,997.43	$ 55,926.79	$ 47,998.50

Noise Barrier Optimization - NB9			
	Analysis 1.0	Analysis 2.0	Analysis 3.0
Total Number of Impacted Receptors	4	4	4
Impacted Receptors Receiving 5 dBA Decrease	3	3	4
% Impacted Receptors Receiving 5dBA Decrease	75%	75%	100%
Total Number of 1st Row Receptors	3	3	3
First Row Receptors Receiving 7dBA Decrease	2	2	2
% First Row Receptors Meeting 7dBA Decrease	67%	67%	67%
Total Number of Benefited Receptors	3	3	4
Total Barrier Cost	$ 552,543.00	$ 422,991.00	$ 602,416.00
Cost per Benefitted Receptor	$ 184,181.00	$ 140,997.00	$ 150,604.00

Noise Barrier Optimization - NB10			
	Analysis 1.0	**Analysis 2.0**	**Analysis 3.0**
Total Number of Impacted Receptors	4	4	4
Impacted Receptors Receiving 5 dBA Decrease	4	4	4
% Impacted Receptors Receiving 5dBA Decrease	100%	100%	100%
Total Number of 1st Row Receptors	5	5	5
First Row Receptors Receiving 7dBA Decrease	3	3	3
% First Row Receptors Meeting 7dBA Decrease	60%	60%	60%
Total Number of Benefited Receptors	11	11	15
Total Barrier Cost	$ 986,221.00	$ 951,242.00	$ 1,082,194.00
Cost per Benefitted Receptor	$ 89,656.45	$ 86,476.55	$ 72,146.27

Noise Barrier Optimization - NB11			
	Analysis 1.0	**Analysis 2.0**	**Analysis 3.0**
Total Number of Impacted Receptors	3	3	3
Impacted Receptors Receiving 5 dBA Decrease	2	3	2
% Impacted Receptors Receiving 5dBA Decrease	67%	100%	67%
Total Number of 1st Row Receptors	3	3	3
First Row Receptors Receiving 7dBA Decrease	2	2	2
% First Row Receptors Meeting 7dBA Decrease	67%	67%	67%
Total Number of Benefited Receptors	2	4	3
Total Barrier Cost	$ 632,734.00	$ 730,882.00	$ 690,694.00
Cost per Benefitted Receptor	$ 316,367.00	$ 182,720.50	$ 230,231.33

Noise Barrier Optimization - NB12			
	Analysis 1.0	**Analysis 2.0**	**Analysis 3.0**
Total Number of Impacted Receptors	5	5	5
Impacted Receptors Receiving 5 dBA Decrease	5	5	4
% Impacted Receptors Receiving 5dBA Decrease	100%	100%	80%
Total Number of 1st Row Receptors	5	5	5
First Row Receptors Receiving 7dBA Decrease	4	3	2
% First Row Receptors Meeting 7dBA Decrease	80%	60%	40%
Total Number of Benefited Receptors	4	4	3
Total Barrier Cost	$ 640,078.00	$ 513,986.00	$ 342,062.00
Cost per Benefitted Receptor	$ 160,019.50	$ 128,496.50	$ 114,020.67

Noise Barrier Optimization - NB13			
	Analysis 1.0	Analysis 2.0	Analysis 3.0
Total Number of Impacted Receptors	3	3	3
Impacted Receptors Receiving 5 dBA Decrease	2	2	2
% Impacted Receptors Receiving 5dBA Decrease	67%	67%	67%
Total Number of 1st Row Receptors	1	1	1
First Row Receptors Receiving 7dBA Decrease	1	1	1
% First Row Receptors Meeting 7dBA Decrease	100%	100%	100%
Total Number of Benefited Receptors	2	2	2
Total Barrier Cost	$ 574,168.00	$ 454,489.00	$ 467,984.00
Cost per Benefitted Receptor	$ 287,084.00	$ 227,244.50	$ 233,992.00

Noise Barrier Optimization - NB14			
	Analysis 1.0	Analysis 2.0	Analysis 3.0
Total Number of Impacted Receptors	4	4	4
Impacted Receptors Receiving 5 dBA Decrease	4	3	3
% Impacted Receptors Receiving 5dBA Decrease	100%	75%	75%
Total Number of 1st Row Receptors	4	4	4
First Row Receptors Receiving 7dBA Decrease	3	3	3
% First Row Receptors Meeting 7dBA Decrease	75%	75%	75%
Total Number of Benefited Receptors	7	6	6
Total Barrier Cost	$ 1,382,975.00	$ 1,211,940.00	$ 1,181,940.00
Cost per Benefitted Receptor	$ 197,567.86	$ 201,990.00	$ 196,990.00

Noise Barrier Optimization - NB15			
	Analysis 1.0	Analysis 2.0	Analysis 3.0
Total Number of Impacted Receptors	2	2	2
Impacted Receptors Receiving 5 dBA Decrease	2	2	2
% Impacted Receptors Receiving 5dBA Decrease	100%	100%	100%
Total Number of 1st Row Receptors	1	1	1
First Row Receptors Receiving 7dBA Decrease	1	1	1
% First Row Receptors Meeting 7dBA Decrease	100%	100%	100%
Total Number of Benefited Receptors	2	2	2
Total Barrier Cost	$ 518,266.00	$ 475,097.00	$ 484,834.00
Cost per Benefitted Receptor	$ 259,133.00	$ 237,548.50	$ 242,417.00

Noise Barrier Optimization - NB16			
	Analysis 1.0	**Analysis 2.0**	**Analysis 3.0**
Total Number of Impacted Receptors	2	2	2
Impacted Receptors Receiving 5 dBA Decrease	2	2	2
% Impacted Receptors Receiving 5dBA Decrease	100%	100%	100%
Total Number of 1st Row Receptors	2	2	2
First Row Receptors Receiving 7dBA Decrease	2	2	2
% First Row Receptors Meeting 7dBA Decrease	100%	100%	100%
Total Number of Benefited Receptors	2	2	2
Total Barrier Cost	$ 554,760.00	$ 470,580.00	$ 462,366.00
Cost per Benefitted Receptor	$ 277,380.00	$ 235,290.00	$ 231,183.00

Noise Barrier Optimization - NB17			
	Analysis 1.0	**Analysis 2.0**	**Analysis 3.0**
Total Number of Impacted Receptors	3	3	3
Impacted Receptors Receiving 5 dBA Decrease	3	3	3
% Impacted Receptors Receiving 5dBA Decrease	100%	100%	100%
Total Number of 1st Row Receptors	3	3	3
First Row Receptors Receiving 7dBA Decrease	2	2	2
% First Row Receptors Meeting 7dBA Decrease	67%	67%	67%
Total Number of Benefited Receptors	3	3	3
Total Barrier Cost	$ 884,598.00	$ 793,976.00	$ 827,411.00
Cost per Benefitted Receptor	$ 294,866.00	$ 264,658.67	$ 275,803.67

Noise Barrier Optimization - NB18			
	Analysis 1.0	**Analysis 2.0**	**Analysis 3.0**
Total Number of Impacted Receptors	1	1	1
Impacted Receptors Receiving 5 dBA Decrease	1	1	1
% Impacted Receptors Receiving 5dBA Decrease	100%	100%	100%
Total Number of 1st Row Receptors	1	1	1
First Row Receptors Receiving 7dBA Decrease	1	1	1
% First Row Receptors Meeting 7dBA Decrease	100%	100%	100%
Total Number of Benefited Receptors*	8	8	8
Total Barrier Cost	$ 380,627.00	$ 344,252.00	$ 316,874.00
Cost per Benefitted Receptor	$ 47,578.38	$ 43,031.50	$ 39,609.25

*ERUs equivalent utilized

Noise Barrier Optimization - NB19			
	Analysis 1.0	**Analysis 2.0**	**Analysis 3.0**
Total Number of Impacted Receptors	1	1	1
Impacted Receptors Receiving 5 dBA Decrease	1	1	1
% Impacted Receptors Receiving 5dBA Decrease	100%	100%	100%
Total Number of 1st Row Receptors	1	1	1
First Row Receptors Receiving 7dBA Decrease	1	1	1
% First Row Receptors Meeting 7dBA Decrease	100%	100%	100%
Total Number of Benefited Receptors*	4	4	4
Total Barrier Cost	$ 462,995.00	$ 377,401.00	$ 372,901.00
Cost per Benefitted Receptor	$ 115,748.75	$ 94,350.25	$ 93,225.25

*ERUs equivalent utilized

Noise Barrier Optimization - NB20			
	Analysis 1.0	**Analysis 2.0**	**Analysis 3.0**
Total Number of Impacted Receptors	7	7	7
Impacted Receptors Receiving 5 dBA Decrease	6	6	6
% Impacted Receptors Receiving 5dBA Decrease	86%	86%	86%
Total Number of 1st Row Receptors	3	3	3
First Row Receptors Receiving 7dBA Decrease	2	2	2
% First Row Receptors Meeting 7dBA Decrease	67%	67%	67%
Total Number of Benefited Receptors	8	7	8
Total Barrier Cost	$ 792,027.00	$ 1,032,043.00	$ 1,023,044.00
Cost per Benefitted Receptor	$ 99,003.38	$ 147,434.71	$ 127,880.50

Noise Barrier Optimization - NB21		
	Analysis 1.0	**Analysis 2.0**
Total Number of Impacted Receptors	3	3
Impacted Receptors Receiving 5 dBA Decrease	3	3
% Impacted Receptors Receiving 5dBA Decrease	100%	100%
Total Number of 1st Row Receptors	3	3
First Row Receptors Receiving 7dBA Decrease	2	2
% First Row Receptors Meeting 7dBA Decrease	67%	67%
Total Number of Benefited Receptors	4	4
Total Barrier Cost	$ 959,147.00	$ 900,534.00
Cost per Benefitted Receptor	$ 239,786.75	$ 225,133.50

Noise Barrier Optimization - NB22			
	Analysis 1.0	**Analysis 2.0**	**Analysis 3.0**
Total Number of Impacted Receptors	5	5	5
Impacted Receptors Receiving 5 dBA Decrease	5	5	5
% Impacted Receptors Receiving 5dBA Decrease	100%	100%	100%
Total Number of 1st Row Receptors	2	2	2
First Row Receptors Receiving 7dBA Decrease	2	2	2
% First Row Receptors Meeting 7dBA Decrease	100%	100%	100%
Total Number of Benefited Receptors	5	5	6
Total Barrier Cost	$ 866,068.00	$ 753,624.00	$ 791,872.00
Cost per Benefitted Receptor	$ 173,213.60	$ 150,724.80	$ 131,978.67

Appendix F – Traffic Data

TRAFFIC DATA

I-65 – South of SR 160		
2021 AADT	45,291	VPD
2043 AADT	49,452	VPD
2021 DHV	3,112	VPH
2043 DHV	3,398	VPH
DIRECTIONAL DISTRIBUTION	49.7	%
SPEED LIMIT	65-70*	MPH
TRUCKS	32	% AADT
	23	% DHV

I-65 – North of SR 160		
2021 AADT	43,670	VPD
2043 AADT	48,812	VPD
2021 DHV	2,747	VPH
2043 DHV	3,071	VPH
DIRECTIONAL DISTRIBUTION	51.5	%
SPEED LIMIT	65-70*	MPH
TRUCKS	22	% AADT
	27	% DHV

Biggs Rd		
2021 AADT	950	VPD
2043 AADT	1,050	VPD
2021 DHV	100	VPH
2043 DHV	110	VPH
DIRECTIONAL DISTRIBUTION	55	%
SPEED LIMIT	30	MPH
TRUCKS	3	% AADT
	3	% DHV

SR 160		
2021 AADT	7,210	VPD
2043 AADT	8,100	VPD
2021 DHV	790	VPH
2043 DHV	890	VPH
DIRECTIONAL DISTRIBUTION	65	%
SPEED LIMIT	45	MPH
TRUCKS	18	% AADT
	14	% DHV

Brownstown Rd		
2021 AADT	480	VPD
2043 AADT	540	VPD
2021 DHV	60	VPH
2043 DHV	60	VPH
DIRECTIONAL DISTRIBUTION	66	%
SPEED LIMIT	30	MPH
TRUCKS	8	% AADT
	5	% DHV

CR 600 S		
2021 AADT	770	VPD
2043 AADT	870	VPD
2021 DHV	80	VPH
2043 DHV	90	VPH
DIRECTIONAL DISTRIBUTION	68	%
SPEED LIMIT	35	MPH
TRUCKS	3	% AADT
	2	% DHV

Leota Rd		
2021 AADT	1,450	VPD
2043 AADT	1,630	VPD
2021 DHV	160	VPH
2043 DHV	180	VPH
DIRECTIONAL DISTRIBUTION	57	%
SPEED LIMIT	40	MPH
TRUCKS	4	% AADT
	1	% DHV

Lake Rd West		
2021 AADT	2,410	VPD
2043 AADT	2,700	VPD
2021 DHV	240	VPH
2043 DHV	270	VPH
DIRECTIONAL DISTRIBUTION	53	%
SPEED LIMIT	30	MPH
TRUCKS	2	% AADT
	2	% DHV

*65mph limit for heavy trucks and 70mph for all other traffic

Source: April 29, 2020 Project Traffic Forecast Report DES No.: 1700135 – by INDOT, Office of Traffic Statistics and Base Year (2016 to 2018) AADT volumes were obtained from the INDOT Traffic Count Database System.

TRAFFIC DATA		Henryville Rest Area I-65 Northbound Ramps	
A.A.D.T.	(PROJ. 2023)	1,063	V.P.D.
A.A.D.T.	(PROJ. 2031)	1,105	V.P.D.
D.H.V	(PROJ. 2031)	108	V.P.H.
DIRECTIONAL DISTRIBUTION		100	%
TRUCKS		47 %	A.A.D.T.
		42 %	D.H.V.

DESIGN DATA		
DESIGN SPEED	35	M.P.H.
PROJECT DESIGN CRITERIA	PREVENTATIVE MAINTENANCE (FREEWAY)	
FUNCTIONAL CLASSIFICATION	INTERSTATE	
RURAL/URBAN	RURAL	
TERRAIN	LEVEL	
ACCESS CONTROL	FULL	

TRAFFIC DATA		Henryville Rest Area I-65 Southbound Ramps	
A.A.D.T.	(PROJ. 2023)	1,057	V.P.D.
A.A.D.T.	(PROJ. 2031)	1,057	V.P.D.
D.H.V	(PROJ. 2031)	95	V.P.H.
DIRECTIONAL DISTRIBUTION		100	%
TRUCKS		46 %	A.A.D.T.
		41 %	D.H.V.

DESIGN DATA		
DESIGN SPEED	70	M.P.H.
PROJECT DESIGN CRITERIA	PREVENTATIVE MAINTENANCE (FREEWAY)	
FUNCTIONAL CLASSIFICATION	INTERSTATE	
RURAL/URBAN	RURAL	
TERRAIN	LEVEL	
ACCESS CONTROL	FULL	

TRAFFIC DATA		SR 56 to I-65 Northbound Directional Ramp	
A.A.D.T.	(PROJ. 2023)	2,462	V.P.D.
A.A.D.T.	(PROJ. 2043)	2,462	V.P.D.
D.H.V	(PROJ. 2043)	209	V.P.H.
DIRECTIONAL DISTRIBUTION		100	%
TRUCKS		9 %	A.A.D.T.
		9 %	D.H.V.

DESIGN DATA		
DESIGN SPEED	35	M.P.H.
PROJECT DESIGN CRITERIA	COMPLETE RECONSTRUCTION (FREEWAY)	
FUNCTIONAL CLASSIFICATION	INTERSTATE	
RURAL/URBAN	RURAL	
TERRAIN	LEVEL	
ACCESS CONTROL	FULL	

TRAFFIC DATA		I-65 Northbound to SR 56 Directional Ramp	
A.A.D.T.	(PROJ. 2023)	2,457	V.P.D.
A.A.D.T.	(PROJ. 2043)	2,457	V.P.D.
D.H.V	(PROJ. 2043)	299	V.P.H.
DIRECTIONAL DISTRIBUTION		100	%
TRUCKS		7 %	A.A.D.T.
		7 %	D.H.V.

DESIGN DATA		
DESIGN SPEED	35	M.P.H.
PROJECT DESIGN CRITERIA	COMPLETE RECONSTRUCTION (FREEWAY)	
FUNCTIONAL CLASSIFICATION	INTERSTATE	
RURAL/URBAN	RURAL	
TERRAIN	LEVEL	
ACCESS CONTROL	FULL	